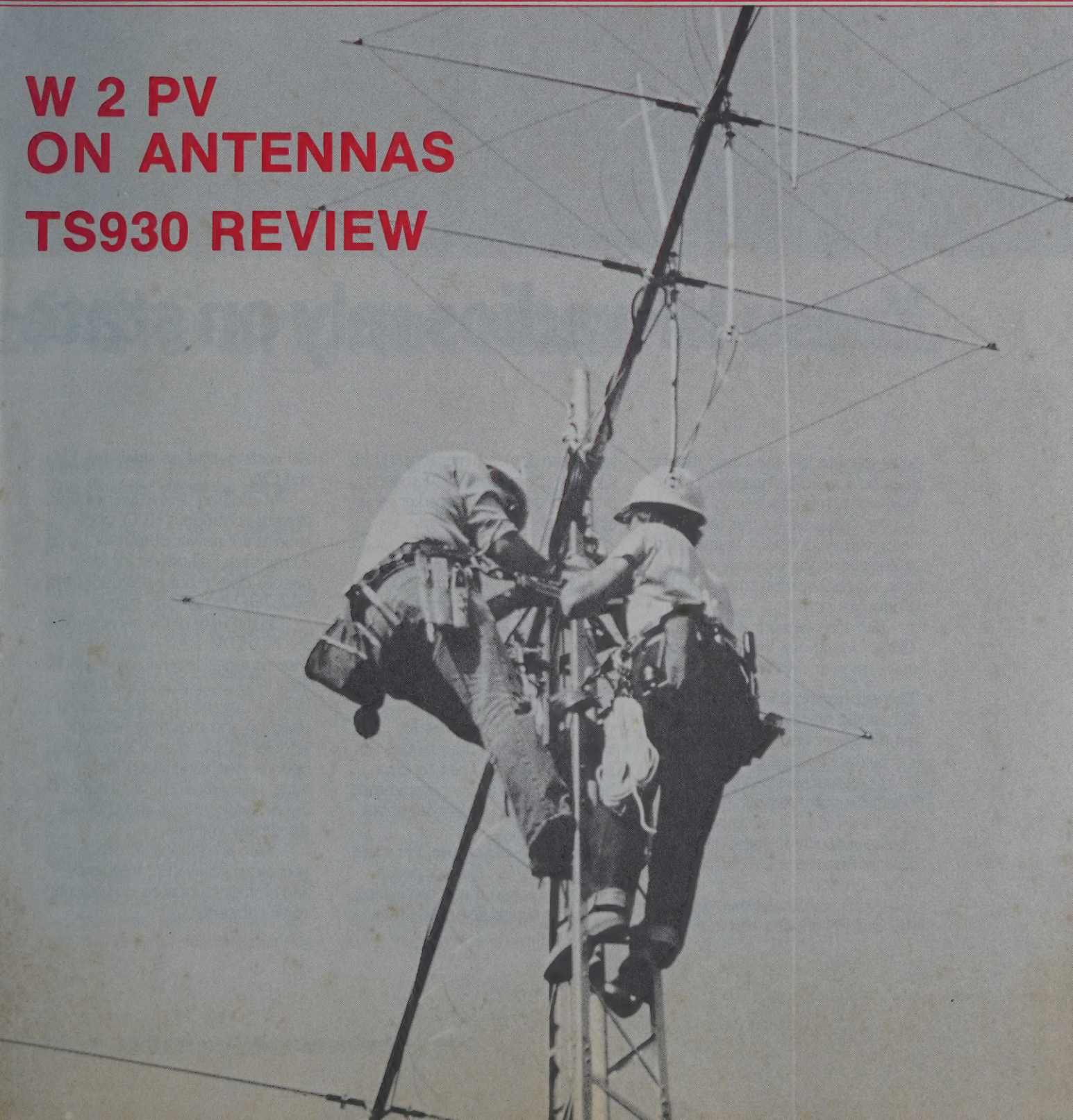
INTN'L MONTHLY MAGAZINE-BY AND FOR ACTIVE RADIOAMATEURS

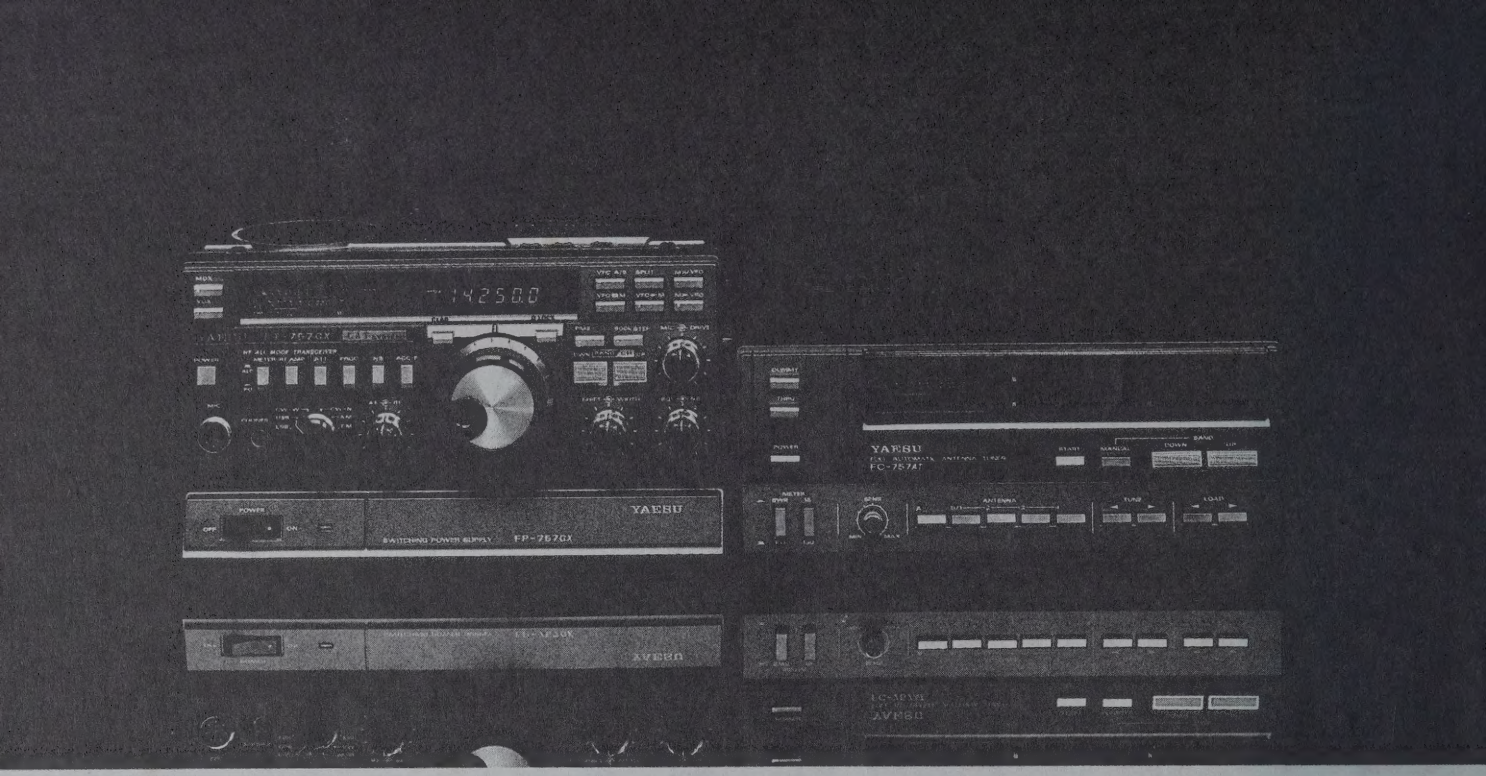
RADIOSPORTING

JANUARY 1985 $1.50

W 2 PV ON ANTENNAS

TS930 REVIEW





Yaesu HF radios rely on state-

Some people feel the name that goes on a radio is more important than what goes into it.

At Yaesu, we let our technology speak for itself: a unique blend of engineering know-how and user suggestions that make our HF products superior.

But don't take our word for it. Take a look at our transceivers and make up your own mind.

The economical FT-757GX. A mobile transceiver that might never leave your shack.

You told us what you wanted in an HF rig that operates both in the car and at home. We've answered with the FT-757GX: a compact 12-volt transceiver with all the extras built in. Features you'd normally pay a lot more for.

As standard equipment you get AM and FM modes, electronic keyer with dot-dash memory, 600-Hz CW filter, noise blanker, AF speech processor and 25-kHz marker generator. All at no extra charge.

The FT-757GX's high-performance general coverage receiver lets you listen from 500 kHz up to 30 MHz. The transmitter covers 10 to 160 meters, including the new WARC bands. Dual VFOs and single-button VFO/memory swap make split-frequency operation easier than ever before.

Use the 8 memories to store your favorite frequencies on any of the bands. Then touch a button to jump to any programmed frequency without worrying about a bandswitch.

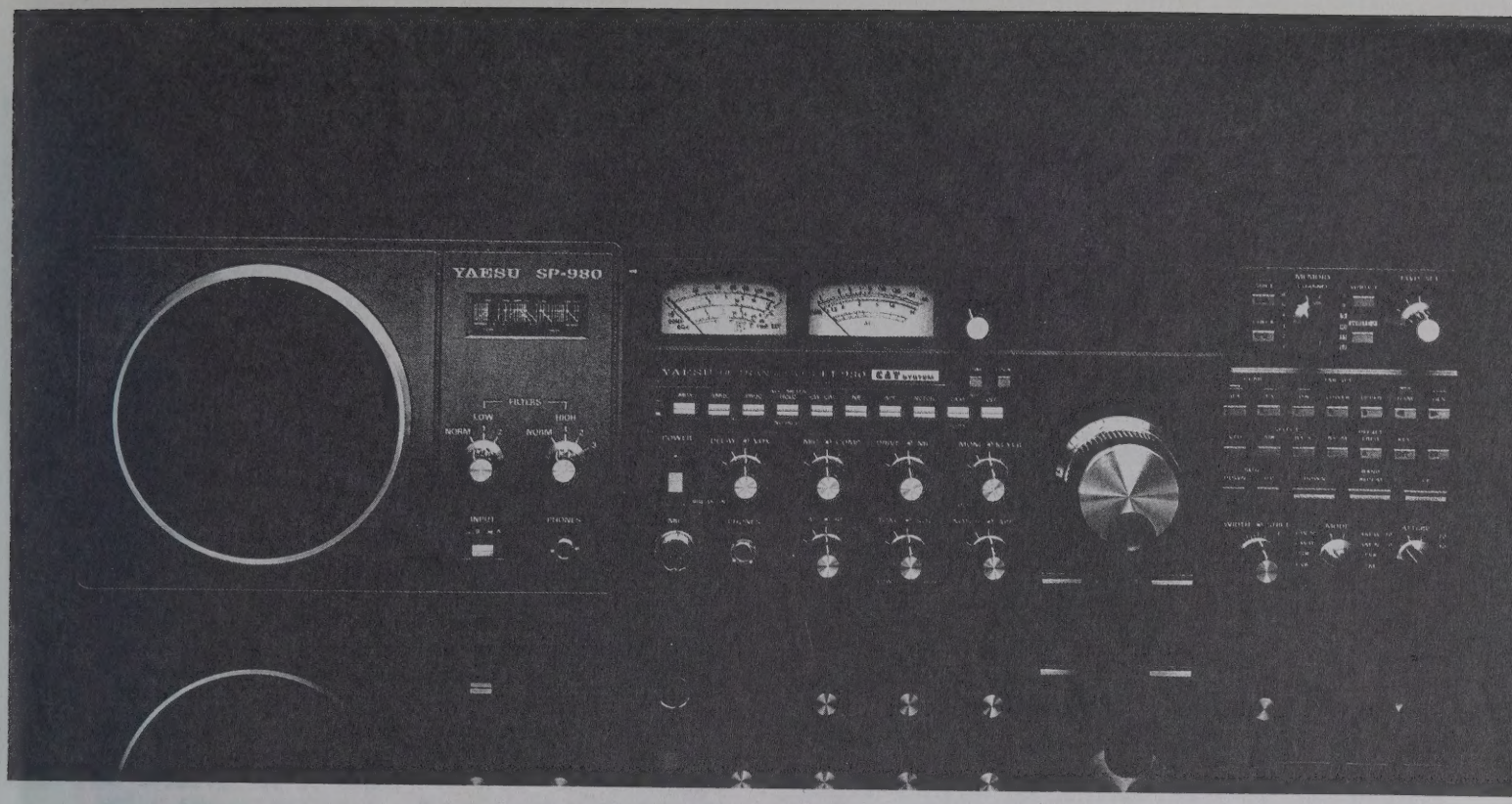
For base-station use, the space-saving FP-757GX flatpack power supply shown in the photo is ideal. With this supply, the rig delivers 100 watts output on sideband, FM and CW.

In addition, a massive heatsink permits continuous RTTY operation at full power output for up to 30 minutes. Full power for long periods does require the use of the FP-757HD heavy-duty supply.

To the right of the transceiver is the FC-757AT, a fully-automatic antenna tuner designed especially for the FT-757GX. This optional tuner stores in its memory the antenna selection and matching network settings for each band. When you operate that band again, the tuner automatically recalls the matching network settings and chooses the proper antenna.

With an optional interface unit, you can control VFO frequency and memory functions via your personal computer.

Contact your Yaesu dealer regarding MARS operation for both transceivers.



of-the-art, not state-of-mind.

The FT-980.
The cleanest signal on the air.
We know that the quality of the signal you put out is a reflection on you.

So when we designed the FT-980, we took clean output seriously. So seriously in fact, that you won't find a cleaner transmitter on the market.

Featuring a conservatively designed final amplifier that loafs at a fraction of its rated power output, the FT-980 cuts distortion levels to new lows. So you get a signal you can really be proud of.

We designed the FT-980 with complete operating flexibility in mind. But not at the expense of fundamental performance.

You can set and forget about 50% of the front panel controls.

Store your favorite frequencies and operating mode independently in each of the 12 memory channels. Review the contents of any memory location, without disturbing the QSO in progress, by using the checking function.

Going from one programmed frequency to another is simple and fast. Just touch a button to recall any channel.

You'll find the FT-980 tolerant of imperfect antennas. There's essentially no power turn-down with an SWR of 2:1 and just 25% turn-down at 3:1.

There's lots of flexibility built into the triple-conversion receiver. For one thing, there are separate front ends for ham and general coverage reception. So ham band operation is not compromised.

Multiple levels of IF filtering assure outstanding rejection of unwanted signals close to your operating frequency. And armchair copy under really brutal conditions.

The FT-980 comes ready to hook up to your personal computer. You can control operating mode, IF passband, frequency, and memory functions from a remote location. A variety of computer interfaces are available. See your Yaesu dealer for details.

State your mind.
When you visit your dealer, tell him you want the latest in HF technology. A radio built by Yaesu.

YAESU

Yaesu Electronics Corporation
6851 Walthall Way, Paramount, CA 90723
(213) 633-4007.

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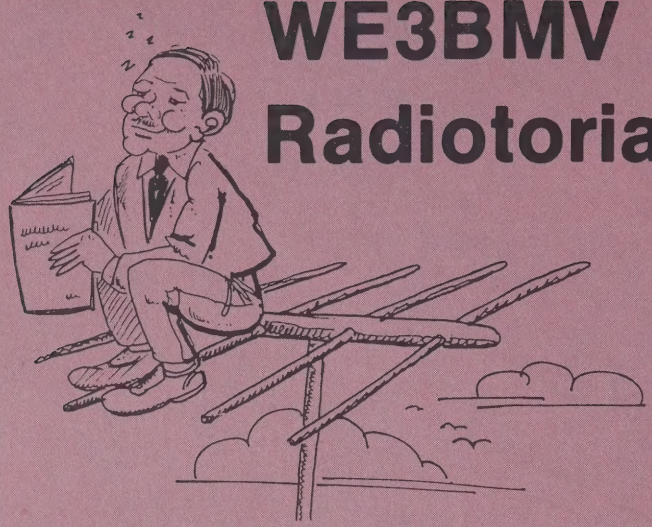
(513) 874-3100.

Prices and specifications subject to change without notice.

WE3BMV Radiotorial



Here we are, starting another year, despite gloom and doom predicted by George Orwell for 1984. Looks like LIFE is like AC voltage, it has its ups and downs. After the ups, come the downs. If there is too much of something, we get fed up, we don't want it. It looks like people are getting fed up with violence on TV, and drinking and smoking is coming down. Maybe even interest in list operations will start declining. We want things that we either don't have or can't get, or that we have to work for. We feel much better if we achieve something, especially if it is something "impossible". Every time I hear there is something "impossible," I'd like to do it. (What's the point of doing something anyone can do?) I think nothing is impossible, it just might take time, but mainly skill and willingness to do it. We all remember what we can do when we are in love, be it with YL, radio or you name it. Doctors say it's good for you, so go for it. It could be the new DXCC bracket, contest record or just "local" competition with your friend.

RADIOSPORTING is my newest "impossible" task. When I made the announcement at the last Hamvention in Dayton, I think most of you thought: "Oh well, another newsletter." Number of friends, some involved professionally in the publishing business, told me it takes a lot of money and people, and it's just plain crazy to try to start the magazine. Some also said that we are too few to support the publication. I felt that there was a need for good magazine for active hams and many of you share that feeling. Armed with that I went "crazy" and started RADIOSPORTING, "barefoot." There is no sugar daddy, just what BMVs saved. But there is a lot of love and dedication. The workload is tremendous, a little bit more than I expected. But work hasn't killed anybody (except in labor camps). It has actually brought me and XYL Sonya closer together. My mechanical engineering background and drafting skills should show up in the graphic make-up. My electronics and automation engineering experience and 13 years with IBM should show up in the efficient computerized system for magazine production. My previous hobby - photography - should reflect in the pictures, but above all, my love for amateur radio should give RADIOSPORTING its "radio soul."

When there is a lack of money, skill has to make up for it. We have to use ingenuity in our radio lives and in our work. We can already say that we are the "fastest" magazine around. The issue is completed on the first of the month, it is printed and goes into the mail three days later. Material is all typeset and camera ready here. The rest is in the hands of the post office. We hope to speed up this process as soon as we get more advertising and find out how to do it better, first class, etc. The mailing list is also done here and instantly. You don't have to "allow six weeks for processing"! If we get your check before the 25th of the preceding month of the issue, you get that issue! As we gradually acquire more equipment, the quality of the graphic make-up should improve and the magazine should get much thicker and more colorful. Acoording to our present schedule, we send the issue to the printer on the first or second day of the month. The reason is, we are trying to include material from the last month (propagation data, contest reports, etc.) in the next month's issue and normally you should have that issue in your hands by the 10th to the 15th of the month. This is different from the other magazines, but the benefit is that stuff in RADIOSPORTING is about 15 days old, while in others it is 2 to 3 months old.

Thank you for all your kind comments. This is the only reward for late nights, sore fingers and pain in the back from typing. It feels good to know that our effort is appreciated and we will do our best to make the magazine your favorite one.

We would like to thank all those who came forward and offered their help. It is a pleasure and honor to have you aboard. Our honoraria will go up as the advertisers come in. (We believe in pay for performance!)

This month we welcome aboard Mike, VE3JTQ with his AWARDS and TECH NEWS column. Don, VE3HGN will keep us thinking with his thoughts. Richard, VE3FAC will help to prepare B/W prints from pictures and slides, which should make our printing even faster. Bob, VE3KZ is the Canadian representative on the ARRL CAC and he will keep us informed about things here and there.

In this issue we continue with W2PV transcripts on antennas. Read it, each word is worth gold. Chuck, K4ZN came up with an excellent article about the effect of Jupiter on sunspots. Our MAIL ROOM got flooded, so we have included some of thespill-over.

We are still looking for column leaders for VHF, SATELLITE, DX, BAND REPORTS, RTTY, AMTOR-PACKET, QRP, NOVICE, DX AND CONTEST CLUB NEWS, HISTORY, and of course technical articles or anything of interest to you, me and all of us. Please take a moment or two and scribble something. Others would like to know and learn. We

are paying for the articles. We have some contributors who declined to be paid, because they want to do it from the bottom of their heart and they have a big one. Thanks a million. At this stage it is a big help. We will at least give you a complimentary subscription to RADIOSPORTING, and we appreciate your help tremendously. We hope to keep this magazine friendly, funny and educational. There is no room for starch, bureaucracy and "corporate stupidity" here.

To those who so far received complimentary copies of RADIOSPORTING and did not subscribe yet: Sorry, this is the last one for you! We hope you like the magazine and subscribe to it. We are sending the next issue to another group of deserving hams. We do not advertise, we believe you should see the product. So please join us and tell others about the magazine that is getting better every month.

We like to invite computer and communications companies to consider advertising here. We have perhaps the most mature audience interested in new products and this is the place to advertise your wares. We have similar standards for advertising as ARRL has and we will not knowingly advertise products of questionable value and performance. We will be glad to evaluate your products and review them in RADIOSPORTING. Those manufacturers concerned with the quality will appreciate the notes and suggestions and use them to improve their products. In the long run this is a better strategy. We will appreciate your business and we would like to spread the good news about your products.

We also offer one classified ad to new subscribers free of charge. Take advantage of it!

All the best for 1985, and may God bless you with health, hapiness, and good condx !

73 - Yuri

Introducing Carl Henson, WB4ZNH and Martha Henson, WN4FVU

Carl D. Henson, WB4ZNH, (8280 Chestnut Drive, Jonesboro, Ga. 30236, U.S.A.) has been an amateur since 1972. He holds the U.S. Extra Class Amateur License. Carl needs only one DXCC country for the HONOR ROLL, but refuses to get on the list to work XU1SS.

Carl and his wife, Martha (WN4FVU), have been married for twenty-one-and-a-half years. They have been on many DXpeditions over the past eleven years. Some have been more successful than others. Carl has operated from approximately 20 DXCC countries, including such rare ones as 5X (Uganda), 3C0 (Annobon Is.), TT8 (Tchad), 9Q5 (Zaire), 8Q7 (Maldive Is.), 3D6 (Swaziland), A2 (Botswanna), C5 (Gambia), 5W1 (W. Samoa), and 4S7 (Sri Lanka).

Martha is an attorney and Carl is an aircraft mechanic for Delta Airlines. Over the years Carl has dabbled in several other hobbies. He had fun with photography, but ruined the sheer pleasure of it by working semi-professionally for several years, helping to finance Martha's education. While he still likes photography, he is not really interested in spending hours upon hours with it.

Carl's other interests and activities are many and varied. He claims that flying is probably his next favorite hobby. He holds a commercial pilot's license, both single and multi-engine, and is a current though not very active flight instructor. Carl and Martha can often be heard operating a 2-meter airborne mobile in the Atlanta area and have flown their own plane to the Caribbean for several contest operations. Carl recently purchased an older but higher performance Piper Comanche 260B. Being an FAA licensed Airframe and Powerplant mechanic, Carl is "enjoying" many hours of work bringing the N9155P up to his standards.

WB4ZNH is perhaps best known for his campaign to have the DXCC rules define list-taking as unethical operating. Carl is also a past president of the Delta Airlines Camera Club.

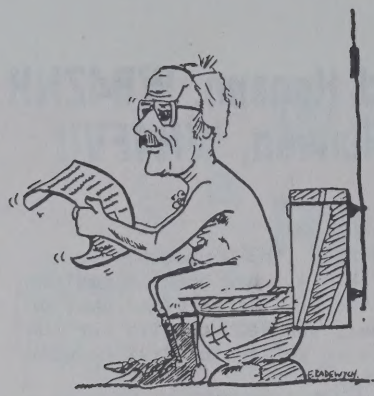
WB4ZNH's club activities are presently limited to the Southeastern DX Club where he has served two years as Vice President and is starting his second final year as President. Carl has been the editor of the SEDX Club's newsletter most of this time as well.

In an effort to maintain his weight and get in shape for long hours bending over a hot microphone, Carl has taken up jogging. He has completed three road races: a 5K, 8K, and 10K. Carl complains that his running is somewhat like his CW ability: a little slow but quite dependable.

Carl has promised us a picture of Martha and himself, but does not have any recent ones. In one of the next few issues, we should be able to print one.

In his column, Carl would like to invite your questions and comments both about DXpeditions and about the column, so that it can be tailored to your needs.It won't be possible to answer all questions in the column, so include an SASE for a direct response.

We are delighted to have Carl as our DXPEDITIONING column leader and we hope that readers will enjoy his excellent articles.



JUST A THOUGHT. . .

Don Newlands
VE3HGN

My grandaddy used to fish for food, my dad fished for sport, and I don't fish at all. I buy my fish at the fish store, along with most other folks. No fuss, no muss. Evidently we three had something in common: we all wanted fish. Grandad would stand in the icy water, casting and reeling until his limbs went numb; one man in harmony with nature. My memory of him is a bit misty. He didn't talk much, but seemed confident and content.

My dad, on the other hand, had an expensive yacht, filled with gear. He bragged about his catch and had a lot of big ones stuffed and varnished which he would point to with pride.

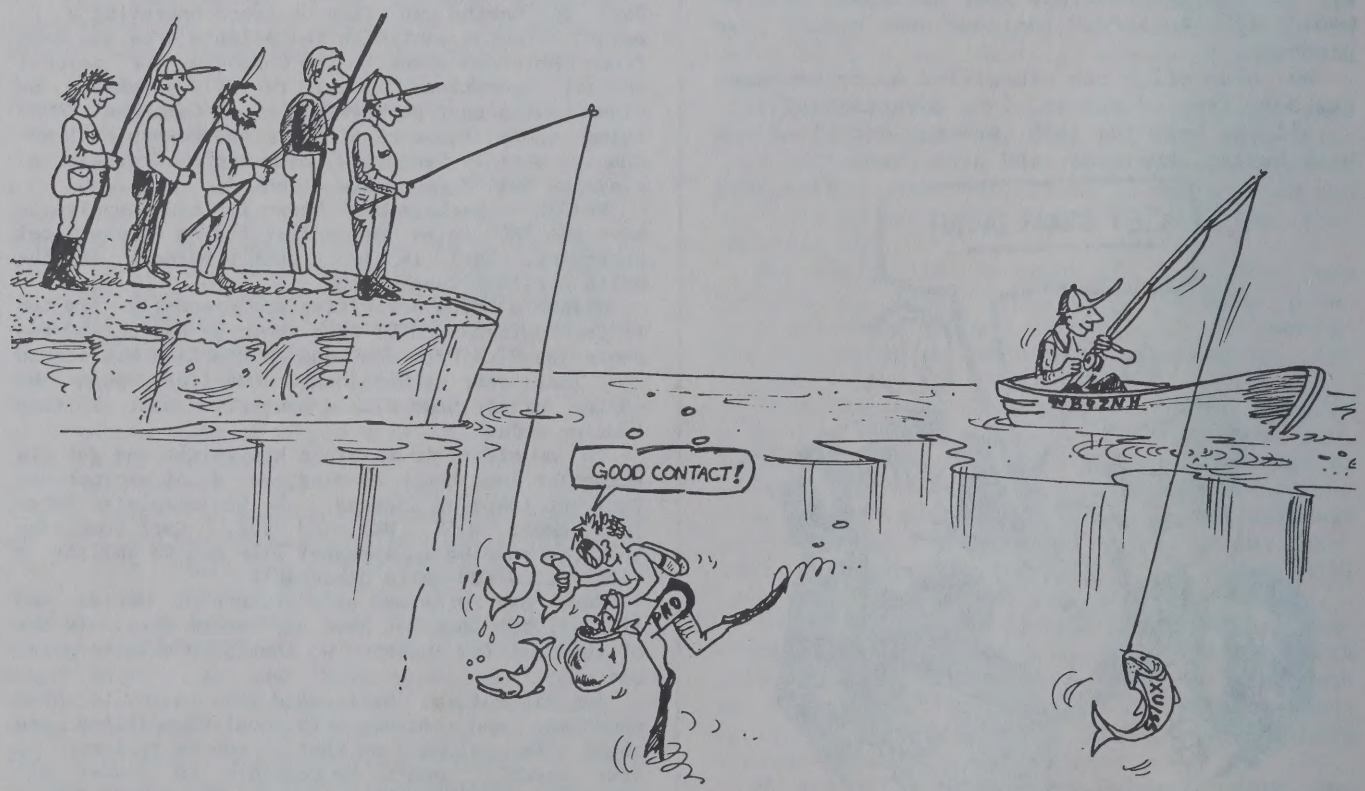
Now, I haven't time for all that crap. I'm prepared to stand a few minutes in line at a fish market and I can either eat it or mount it, but for anybody to freeze his butt in waders? Or lay out big bucks for a boat just to fish from? Today, he's hopelessly out of touch.

Now you may ask what all this has to do with ham radio? Simple! My granpappy was an original DXer, wire antennas, 20 Watts and a spark that could set the house on fire, and my dad was a DXer with stacked antennas, transmition lines as thick as your wrist, and 2 meter spotting nets. And he kept the family up all night with his yelling and screaming.

From my perspective, this all sounds primitive and disorganized. I prefer a simple lil' tribander at 40 feet, and to plug in my Seven-Thirty and give my call to the list taker and in a minute it's all over. No fuss, no muss. My certificates (all framed, of course) are just the same as theirs. Now that's progress!

CQ DX CQ DX, is a call of the endagered species. Now it's "put me on the list." Now how do you get on the list? Ya' phone'em, that's how. And while you're on the phone, ask'em if they have any fish.

73, Don



DX NEWS

A71AD, Quatar
shows up from time to time on 80 m SSB around 3.795 around 0300 Z.

A92EM, Bahrain
surprises stations on 40 m CW, answering their CQ. Worked him around 1400 Z short pass at 7.001.

BY, China
BY1PK, BY4AA, BY5RA active on 20 through 80 m. BY4AA was coming through in W6 land on 3795 59+10dB.

C53FG, Gambia
Tony is active daily on 21.230 MHz around 1800 Z. QSL to Box 273, Banjul, Gambia.
DL7AH/C56 is also operational on 10 - 80 m, QSL via DARC or F6DYG.

D44BC, D44BS, Cape Verde
QSL for both stations go direct, there is no QSL buro and they do not have a QSL manager

EP2MRD, Iran
worked by some European stations on 20 m SSB, also EP2MMK.

JTØAO, Mongolia
active on 80 m and is one of the rarest zones for that 5BWAC award. He has been reported around 3.796 from 1100 Z. On 20 m JT1BG hangs around 14.210 SSB and JTØEC with JTØDJT showing up around 14.020

KH6JEB/KH7, Kure Isl.
has been worked around 3.799 at 1100Z and 21.290 around 2000Z, QSL via Call Book address.

PZ1DV, Surinam
is very active and quite often shows up in the contests giving a rare multiplier to many. He operates CW and SSB and quite often wanders into the general portion of the US band around 3.890 on 80 meters. He can also be found on 20 m near 14.007 between 2100 and 2300 Z, or on 15m between 21.012 to 21.032 between 1600 and 2200 Z. PZ1DT, PZ1AP, PZ2AC, PZ5ES are also active.

TT8CW, Chad
is operated by two operators - F6GXB and F6AJN, ex FB8ZQ; frequently found on 40 m CW and SSB.

T52JL, Somalia
operated by OH2JL for about six weeks.QSL cards via his home call.

VK9XZ, Christmas Isl.
is on the air and should be active for the next two years. Also on 80 and 40 m SSB.

VKØYL, Macquarie Isl.
YL operator Denise Allen was recently transfered from Willis Isl. as a weather observer; will stay there for about 10 months. Should be active on all HF bands plus 6 m.The QSL cards go via VK3AH.

VP8, South Georgia
on March 7 to 9, a British ship will land there and some amateur operation is possible. Operators GW4SBB, GW4JAD and GW3NRP will also be active after Feb. 1, when they board the ship in Punta Arenas, Chile.

VU2GO, India
YL Santini(?) is getting ready to fire-up on 80 m band with a 3 el. rotatable beam. This will be a welcome catch for those chasing zones on 80 m.

YB5ASO, Indonesia
on 160 m, had an opening to the East Coast of U.S. on Oct. 21, but never again since. It was from 2234 to 2250 Z skew path.

ZR6AOJ, Marion Isl.
This licence has been issued for the group going to Marion Island. It is a special VHF licence with permition to operate HF bands. There should be another operator stationed on the island for about a year. The last operation was ZS2MI.

1AØKM, SOM
were active on all bands during the first part of December.

3YØAA, Bouvet ?
this station was worked on 20 m SSB. There were some questions to his authenticity. The expedition heading there should be active very soon.

3YØAA, Peter I Island
Apparently, a group of Japanese operators are heading there. The license in their hands is valid from Jan. 1 to Mar 1, 1985 and 1986. The operators are JR1HHL, JF1IST and JA1MIN. This is the first time the brand new DXCC country will be activated. Willy DeRusse, was in the vicinity of Peter I on his voyage, but never fired up from there. The weather is very bad in this area and landing is difficult. The operation should take place in January.

3B8CF, Mauritius
also, 3B8CD and 3B8DB are quite active on 40m CW around the bottom end of CW band.

4U1VIC, United Nations, Vienna
has be denied DXCC status by the ARRL. DXAC has voted against adding the station to the DXCC Country list, but this decision might still be reversed in light of the recent ARRL Board of Directors order to reconsider the matter.

5R8AL, Malagasy Rep.
keeps showing up on 40 m around 0100Z also 15 m SSB.

7Q7LW, Malawi
is back on the air, look for him around 21.285 and 1830 Z. QSL via L.Sampson, Box 24 Mtakataka, Malawi.

Looking for a place to go on the DXpedition? Here are the most wanted countries by the members of the CW Honor Roll according to "The DX Bulletin":

ZA, XZ, 7O, CEOX, YA, XV, VU/A, 5A, A6, 4W, 5U, C9, S2, XW, VP8 S.GA, 3Y, YI, VP8 SS, XF4, XU, ZL8 in that order.
(The poll was taken before CEØX opn.)

(Thanks: The DX Bulletin, Westlink, Worldradio, VE3HGN, VE3BMV.)

Heard or worked anything new lately? Please send us a note or see you on Sundays at 14.199 around 1900 Z.

160 m DX Frequencies

COUNTRY		FREQUENCY (kHz)
CT, CT2, CT3		1830 - 1835
DL		1825 - 1840
		SSB 1830 - 1835
EA, EA6, EA8, EA9		1825 - 1850
F & FR POSS.	(NOTE 1)	1830 - 1850
JA, JD		1907 - 1913
LA, JW, JX		1820 - 1850
LX	(NOTE 2)	1830 - 1850
OX, OY, OZ		1830 - 1850
		and 1720 - 1740
SM		1830 - 1845
SP		1750 - 1950
TF		1820 - 1850
USSR	(NOTE 3)	1850 - 1950
		SSB 1875 - 1950
Y2		1830 - 1850

NOTES:
1. FG7AM is often found at 1824, F8VJ often at 1827 listening 1808.
2. LX1PD often operates at 1825.
3. Many USSR stations will answer CQ's between 1830 and 1850 on CW.
4. The band below 1825 has been invaded by commercial operations in much of Europe, Asia and Africa. Only 1809 to 1812 and 1823 to 1825 are reasonably free form commercial QRM.
5. Press CW transmissions originate in West Germany on 1830 and in Belgium on 1831, hence these frequencies are useless in Europe. (AD8I, MRRC "Flash")

STATIONS ACTIVE ON 160 M

CE8ABF	1835	0300
D44BC	1835	0200
EA3VY	1832	0500
EA8AAU	1855	0400
F6BKI	1850	0600
FG7AM	1832	0300
FO8PR	1830	0600
FW0BX	1837	1000
GD4BEG	1838	0500
GI3OQR	1822	0400
GW3YDX	1832	0600
HB0NL	1834	0500
HI8DAF	1838	0100
HI0MF	1844	0400
HK0BKX	1823	0200
HK0HEU	1835	0415
HP3FL	1830	0500
HZ1AB	1827	0200
KD7P/KH2	1827	1300
KJ9W/KH2	1826	1130
KH6CC	1832	0600
KL7AF	1805	0700
KL7GKY	1835	1100
LU5WP	1831	0530
LZ1KDP	1833	0300
LZ2BE	1834	0400
OK2BWM	1834	0400
OK2PGU	1833	0400
PJ2FR	1831	0200
SM6EHY	1837	0500
SV5OX	1835	0230
SV0AA	1825	0215
T32AF	1825	0600
TG9AL	1835	0600
TI2CC	1828	0500
UB5ZAL	1836	0400
UT5AB	1832	2400
UO5GQ	1850	0400
VE3OJY	1837	2230
VK3BEE	1813	1200
VK5KL	1807	1100
VK6HD	1807	1245
VK9ZA	1830	1100
VP2EC	1817	2400
VP2MIX	1825	0300
VP2MO	1839	0100
VP9AD	1829	2400
XE1ME	1835	0425
XE1WAC	1815	0445
Y39XO	1835	0430

ALASKA OPERATING EVENT & AWARD

During March 1985, contacts with members of the Arctic Amateur Radio Club will be confirmed with special QSL cards picturing Fairbanks' three major winter events: The Yukon Quest Sled Dog Race from Whitehorse, Canada to Fairbanks; the Winter Ice Festival; and the North American Open sled dog race. The AARC will mount a 48-hour contest - style operation during the race from 0000Z March 15 to 0000Z March 17 on 80 meters through 70 cm using the club call sign KL7KC.

Submit QSL from KL7KC dated March 15, 16 or 17, 1985 and cards from any two members of the AARC dated March 1985 (or a list of contacts certified by an official radio club or two other radio amateurs) to qualify for the handsome award.

Endorsements for working up to 25 additional club members during March, 1985 are available. Send submissions to: Arctic Amateur Radio Club,PO Box 81389, Fairbanks, AK 99708.

Please include US $5.00 to cover the cost of certificate printing and handling.

PROJECT PEACE

PROJECT PEACE, initiated by WA2BGE, Jean, president of SAYLARC (Second Area Young Ladies ARC) has been accepted by DXers across the country. The object is to spread our desire for PEACE in every corner of the world. Who has more opportunities to do this than HAMS?! It is requested that Hams sign every DX QSO with Peace, 73 on both SSB and CW, and write Peace on their QSL card, also. If you can translate the word into the language of the DX contact, imagine how pleased he or she will be!

If thousands of us start spreading the hope for PEACE in each of our DX contacts, who can tell what far-reaching results we may promote?

Peace, 73 and Great DXing

ARRL INCUMBENTS OUSTED

A pair of long-time ARRL Board members have been ousted from their posts as a result of the balloting in the League's 1984 divisional elections. The biggest upset occurred in the New England Division, where challenger Tom Frenaye, K1KI, unseated incumbent John Sullivan, W1HHR, in what may be termed the most "aggressive campaign in the history of ARRL politics."

Frenaye literally beat the bushes for votes and mounted what is best described as a "Reform Campaign," complete with a series of skillfully produced press releases to various amateur publications. Frenaye pointed openly to various problems he saw in the overall ARRL structure, such as his feeling that QST was being diluted in its overall value because of the many League special interest publications dealing with RTTY, DX, ATV and the like.

K1KI also harped on the lack of growth in the Amateur Service, while at the same time putting forth his opinion that the ARRL was trying to spread itself too thin by trying to undertake far too many projects. His opponent, incumbent Director Sullivan, never mounted a major campaign effort, with the end result being 2,752 votes garnered by Frenaye and only 1,398 for Sullivan. Obviously, K1KI's "message" was heard.

The second big surprise came in the Hudson Division, where Linda Ferdinand, N2YL, ousted incumbent George Diehl, W2IHA. This one came as a shock to many long-time "League watchers" who expected Diehl to win by a wide margin. Ferdinand had claimed that better representation for the northern portion of the Hudson Division was a major need, and those voting responded by giving her 1,940 votes to the 1,642 garnered by W2IHA.

Possibly the greatest "vote of confidence" ever given to an "appointed incumbent" was the result in the Southwestern Division, where incumbent Vice Director Wayne Overbeck, N6NB, was pitted against Karl Pagel, N6BVU, Adrenne Sherwood, WA6YEO, and Katherine Schaffstein, WA6FAH.

In what can only be termed an "unprecedented landslide," Dr. Overbeck - who was 1980 "Ham of the Year" - garnered 3,064 votes while his closest runner-up, Karl Pagel, N6BVU, was only able to attain 490 votes. The ladies in the race fared similarly to Pagel.

It is interesting to note that while all four are popular figures in the Southwestern Division, none bothered to mount a major compaign. A similar vote of confidence was given to Rocky Mountain Division Vice Director Marshall Quiat, AG0X, who beat contender Robert A. Scupp, WB5YYX, by a margin of 1,601 to 311.

Northwestern Division Director Mary Lewis, W7QGP, was returned to office for another two years, but she has a new Vice Director. M.L. Gibson, W7JIE, decided to challenge Director Lewis, coming in last in a three-way race. As a result, Rush Drake, W7RM, is the new Northwestern Division Vice Director, having gathered 1,839 votes to out-poll two other contenders.

Finally, in the Central Division, it was Huntington vs. Ebneter, with incumbent Director Howard Huntington, K9KM, beating out former Vice Director Kenneth Ebneter, K9EN, to retain the division's Vice Director's chair. The vote here was Huntington - 2,924 and Ebneter - 1,217.

While possibly not as exciting as the recent US presidential race, these elections are important since they affect the overall make-up of the League's Board of Directors, and these are the men and women who set the basic political policy of the overall US Amateur Service. (WA6ITF, Worldradio)

80 METER HDGOS MEETING

On October 13, 1984 a special meeting took place in a colorful autumn setting in Massachussets. The place was Groton, a country club there. The HDGOS - Hardly Dedicated Group Of Souls who are mostly 80 m DX operators discussed many aspects.

The US band expansion was viewed negatively overall and general disappointment was voiced for the following reasons. Bands in IARU region I and III as well as elswhere in region II have not changed. The DX windows are 3.500 to 3.510 and 3.790 to 3.800 MHz by long standing gentlemen's agreement, endorsed and recommended by IARU. Now suddenly there is a large new group occupying 3.775 to 3.800 MHz segment of the band. Any European or even Canadian station can create chaotic pile-up, especially now, when the higher bands are in bad shape.

It's difficult to say what should be done. It looks like there is no point to moving the DX window down. In other countries in region. III the DX window is between 3.794 and 3.800 MHz as

dictated by many government regulations. Traditions in the rest of the world are more important than US band expansion.

Quite an extensive discussion went on about radiation and propagation, especially on the 80 m band. It was felt that even long haul DX is not always at a low angle, which means that even antennas close to the ground, other than verticals, work. K2BT did not disagree.

An interesting presentation was given by KO1F, in Maine, who has studied his antenna take-off angles by locking his Argonaut on transmit and then flying over his lakeside QTH at various heights and using a field strength meter.

The effects of trees and foliage were discussed with mixed feeling on this one. Most people agreed that foliage and rain are detrimental. (Rain should be good for ground conductivity, but bad for "wetting" the leaves. -BMV) It was observed that some super propagation to Europe from VE1 is exerienced when a cold front or a low pressure center passes through and when this hits the mid-Atlantic area.

K1FWF, John, showed some slides of raising the 3el. KLM 80 m Yagi up on a wooded hillside QTH of WA1EKV atop a 100 ft. tower. We also saw it performing, VK6LK was worked with a good report when the sun was still shining.

We also had an opportunity to view the W1CF invisible antenna farm. Dana is enthusiastic about his instant array and for a good reason. It was difficult to find the antennas. After several minutes of scanning the terrain I still couldn't see the antennas, had to follow the coaxial cables and found myself in the muddy swamp. There were the four verticals among the 40 to 70 feet tall hardwood trees. When I asked Dana about all the tall trees around, he said that it doesn't seem to affect the antennas much.

As a result of this meeting in New England, there will be a club formed for the 80 meter DX operators. They are planning a get together at Dayton and a publication of a newsletter.

Sauli Arosankari, VE1AIH

MICHAEL McGIRR, K9AJ NEW IDXF PRESIDENT

Michael McGirr, K9AJ, became president of International DX Foundation this year.

Mike has been licensed since 1963 when he lived in Irvinton, New Jersey. Between his origiinal call (WB2JYN) and his current one, he was WB9SOR. During this same period, Mike earned his medical degree.

In the relatively short time he has been licensed, Mike has certainly made his presence known in our world of Amateur Radio. For instance, he has earned both 5BDXCC and 5BWAZ. Furthermore, he is on the DXCC Honor Roll. But, his DX efforts have not all been from the USA. He heard the furor of the "other side of the pileups" when he operated from 4S7AJG, 8Q7BQ and 9N1MM.

Mike's operation at Father Moran's station in Nepal lead to his being host to 9N1MM recently.

Mike would be a good person to have on any DXpedition,. He is not only a skilled radio operator, but he wears a "second hat" as a certified member of the American Board of Emergency Medicine. This is a rather new medical specialty and one demanding a broad, deep knowledge of trauma practices. And, what DXpedition has not had its trauma, medical and otherwise?!

K9AJ's life is shared with his good spouse, Susan, also a Ham (KA9RHK) and their four children, 8 years to 7 months. They all live in Crete, Illinois (about 40 miles south of Chicago).

Team effort - Amateur Radio and the Canadian Police

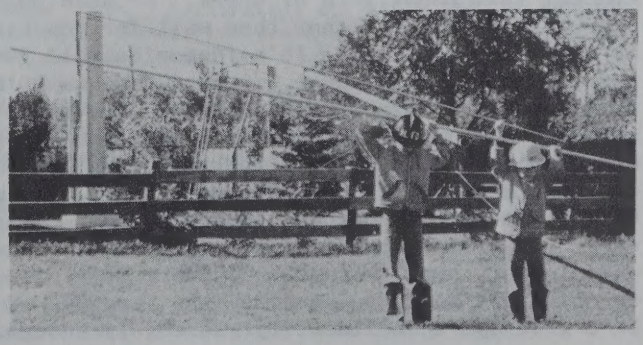
This account is to put on record the group effort carried out on Monday February 13, 1984 to track down Clark Bremner, the son of our friend Tom, who had collapsed and died at a church working bee on the previous Saturday. Clark was traveling in Eastern Canada and was active with a group called "Youth with a Mission. His family attempted to contact him by phone at his last known address in Cambridge, Ontario. The call was taken by an answering service which would not be checked until after the weekend - Ontario is 15 hours behind Sydney time.

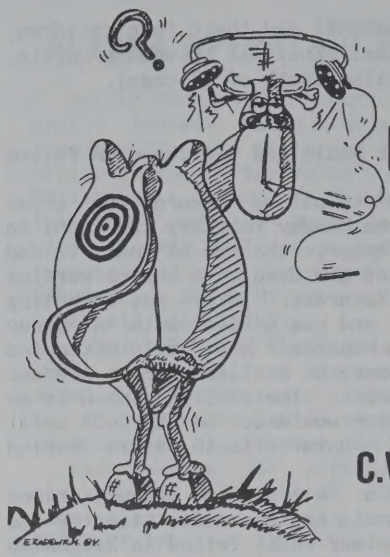
On Monday at 8 a.m. a train of communications was set in motion via amateur radio to try to locate Clark. An amateur radio friend in Balgowlah (Harry, VK2DA) known to have regular contacts into Ontario, was briefed and a search for Canadian amateurs commenced. Two others joined in the search, VK5ON (Ron)in Adelaide and VK2RB (Ray)in Clontarf. By 8:30 a.m. we had contacted four Ontarian amateurs, VE3HGZ (Rocco), VE3HGN (Don), VE3HC (Fred) and VE3AS (Al) in Paris, Ontario. Al was able to receive Harry very well and took the message and agreed to relay it. Paris is about 100 miles from Cambridge. However, he was able to contact VE3AAI (Jim) on the Cambridge 2 meter repeater, who in turn took over. Jim rang the phone number and received the same frustrating reply. He decided that it was time to contact the Ontario police.

The details from then on are not so well known. However, VE3AS (Al) subsequently reported that the Ontario police handed it on to the Nova Scotia police and they in turn to the New Brunswick police. The latter tracked Clark down in the town of Saint John. At 2 p.m. that afternoon Sydney time, Clark phoned his mother Joan, five hours after the initial action started. That was definitely a good team effort!

The following morning Al and Don were on the air again and we were able to convey our grateful thanks to them that the "mission was accomplished." Clark subsequently rang his mother a couple of times and comforted her from afar.

As a point of interest for the uninitiated, the path over which the amateur signals passed from Sydney to Ontario was on the great circle "dark route" via the southern Indian Ocean, South Africa, southern and northern Atlantic Oceans, i.e., WSW from Sydney a surface distance of about 24,000 kilometers. The 20 meter amateur band was used for these contacts. (VK2IK, "AMATEUR RADIO," Nov. 1984)





HERE'S THE BEEF

C.W. Bug, NØ/FØOL

Yes Sir, Sir! We are back Sir! Let's have some more beef, Sir! What's this "Sir" business you ask? Well, it comes either from the army, CBers or the Canadian maritimes. But I hear more and more of it on the radio. The rest of the radionized ham world is calling each other by their first names. When you are on the radio, you are Barry, Juan, Rajiv, Yuri or whatever your parents named you and the department of call signs licensed you. In private life you can call him JJ, or you can call him Sir Captain Sir, but don't bring that to amateur radio. We are all a big fraternity, brothers and sisters in radio under one ionosphere and we give our first name (we don't have "handles")! In some languages there is a difference between "YOU" (Vy, Sie, Vous, etc.) and "you" (Ty, Du, Tu, etc). In the Soviet union, they usually use "YOU" (maybe because they are mostly party members), but most of the other countries use "you." But they still use their first names and not Sir, Mister, Towarish or Your Highness! So forget the Sir business and let's use the names our parents gave us. Also save the "handles" for your garden tools!

You know what else drives me bananas? Turkeys, who think they are hams and do not use their call signs. Ever heard that pile-up and you don't know who it is? You listen for 15 minutes and there is no call sign coming from the turkey! He thinks that if people call him, they heard him yesterday or have ESP! This is the sign of LID or turkey of highest caliber! In a contest this means lots of dupes, because people will call you rather than wait for you Sir to sign your call sign. It's faster to call you and ask about the secret, rather than wait a day! You want a hint? Good operators instead of saying: QRZ, just say KH6IJ or whatever they are. You shouldn't hold it for more than 3 QSOs or one minute, whichever comes first. It's better to say it just as "enpeefourgee" and every so often phonetically. It doesn't take any longer than "quarzed." If there is a pile-up on you we know you "quarzed" us anyway. So be a good sport and identify! Strangely enough, most regulations require that anyway.

Most of the Old Timers beef to me about deteriorating manners on the bands. Arrogance is spreading. We see that mainly on phone, during contests, DX pile-ups and during "regular" operations. This probably comes, to a great extent from the fact the we see trends for deregulation and guys like Bash trying to make a fast buck trying to sell licenses wholesale, without worrying about the outcome. Have you ever heard Dick Bash operating? Makes your hair stand up and you wonder if your dial is not stuck on 27 MHz. And he is now writing a column in one of the magazines! Where is sanity? Every time you hear one of his graduates, send Dick a post card!

Now that examinations are in the hands of VECs let's make sure that people that get their licenses are prepared and educated about amateur radio and use proper procedures and behave like gentlemen (or gentlepersons). Amateur radio frequencies were given to hams for experimentation and communication and not for cursing and animal behavior. We fully support actions of governments to remove idiots from the bands. Believe me, it is a lot tougher in other countries! Besides, it beats me why anyone would want to broadcast to the whole world that he is a LID and a moron?

Thousands of cheers to all of you who expressed the rejection of removal of CW requirements for a license! I just can't figure out why Wayne Green and others do not cater to CBers. They are so deregulated that there is nothing left to throw out. Do we need that to happen to our hobby? NO, Sir. Any true ham and human being would first consider the well-being of amateur radio and then his or her pocket book. You can make money honestly too!

Remember Wayne selling schematics for blue boxes to cheat Ma-Bell on long distance? That was OK (for him anyway). Now he is crying about software piracy, because he is on the other end of the stick. Where is his backbone? I hope he takes his millions and leaves us alone.

Don't be afraid of learning, even if it is CW! It might save your life one day. It has saved many lives in the past. Learning never hurt anybody; on the contrary, it can only help. It will help to increase man's distance from the apes and our horizons will be much wider. Besides we will feel a lot beter if we achieve something we had to work for.

If we hear a weird one on the air, let's very politely point out his errors, be it his signal quality or operating procedure. He might not know about his "problem" and in most cases he will appreciate the remark and get things in order. Especially with all those transceivers around and no extra receiver capable of monitoring your own signal, anything could happen.

True hard-boiled hams identify often; they don't call anybody "Sir" on ham bands; they listen a lot; they learn all the time and love their hobby and want to preserve it for their kids, too.

Clara, NØ/FØOL

DXpeditioning

Carl Henson, WB4ZNH

By the time Martha and I climbed down the steps from the SABENA Boeing 707 at Entebbe Airport, we were already seasoned travelers. We had visited over 20 different countries and operated from about a dozen. Martha and I were very familiar with life in developing countries, having visited Africa on two previous trips.

It was Sunday and a light misting rain was falling. The apron side of the terminal building was still riddled with shrapnel and bullet holes from the famous Israeli "Raid on Entebbe." Even more than usual, I went through my panic-stricken search for our luggage containing the tri-band beam and the rest of the nearly 300 pounds of belongings and equipment that had been checked through all the way from Atlanta. The small handful of passengers all had their luggage and were gone, but ours was not in sight. Mentally, I rehearsed an act of throwing myself prostrate in front of the aircraft to prevent its leaving until I could personally examine each cargo hold. A helpful Sabena employee went with me to the 707 and helped me recover our luggage which had been loaded first before several pallets of air freight.

Minutes later, with all of our papers duly stamped, we loaded into a tumbled down old taxi. Not having Ugandan shillings to tip the porters, I offered packs of cigarettes. Actually, I was somewhat surprised when the tobacco disappeared so quickly and was received with great appreciation. The taxi was started by pushing. Clearly this was the NORMAL method; batteries, I learned later, are in very short supply and are very very expensive.

I was nearly delirious with anticipation. I get that way. Adrenaline flowing freely, it seemed that nothing could spoil my attitude. Very soon we came to a roadblock of Tanzanian soldiers, enforced with a machinegun nest as well as the automatic weapon slung upside-down and protruding from underneath the soldier's poncho to keep the rain out of the business end. I was completely undaunted by being ordered to spread out nearly all of our belongings in the middle of that dirty road in the rain. Finally, we were on our way again, the taxi racing down the narrow asphalt road as though the devil himself was right behind us.

Since it was Sunday, many of the Ugandans were out walking along the road. Nearly all were dressed in colorful robes or stylish western clothes. It seemed so peaceful. The taxi careened around a curve and we saw several people in a tight group peering over an embankment. Others were crossing the road in that direction. Assuming that all Ugandans drive like our taxi driver, we stopped to help the victims of an automobile crash. Our driver stuck his head out of the window and called to a man in Swahili. The man came over and a brief discussion ensued. Our driver turned around and said to me, "They have found 10 bodies over there, all shot. Let's go look!" At this point, I realized we too were in real danger and it was too late to turn back. The plane was surely gone, and another would not come back for three days. "No," I said, waving my hand down the road, "let us go on to Kampala." Suddenly death in Africa was no longer merely statistics to read in the newspaper. This DXpedition was no longer a vacation holiday to be enjoyed while playing our favorite game. Now this was a journey with no turning back, with a real possibility that we would be unable to control our own destiny!

The next day, after two trips to the local police station, we received the police and hotel management approval to install and operate our already PTT-licensed station.

Four days later, the Ugandan military invaded our room. Our equipment and our passports were confiscated and we were interrogated by a very excited intelligence officer before a group of senior military officers, with many machinegun-armed soldiers looking on. It was made clear to us that we were suspected of being spies. Uganda hangs spies. We did not sleep much that night! The following morning, we were greeted by the Chief Engineer of the PTT, carrying our radios. He was most apologetic for our ordeal and promised that a guard would be placed in the hotel to prevent a recurrence of this embarrassing situation. As for Martha and myself, we were just thrilled to be off the proverbial hook!

For two weeks, we operated from the top floor of the Kampala International Hotel above a battlefield, as WN4FVU/5X and WB4ZNH/5X. The nights were punctured with the staccato sound of machinegun fire, occasional distant artillery, small arms fire in the streets and frequent explosions of grenades. When we had been in Kampala for several days, I found an English language newspaper with this headline, "WAR IS OVER!" Idi Amin's troops had been defeated in what was their last attempt to retake Uganda from the Tanzanians. The shooting took a one or two-day recess but soon returned to nearly the same level we had first encountered. The soldiers had no money and hardly any food, but with guns they just took what they wanted. In anticipation of elections to be held about a month later, the two political parties were busy trying to kill the leader of the other party. Milton Obote's party seemed to be the most ruthless. Obote also had the support of Julius Nyerere, the dictator of Tanzania. If you remember, the people danced in the streets when Idi Amin overthrew this tyrant. The people lost the election, Obote won.

This was the first operation since 5X5NK left Uganda in about 1977 and there has been no sizable operation from Uganda since this DXpedition in October 1980.

The moral of this story is to KNOW your DXpedition destination thoroughly beforehand! Take anything said by the representatives of a country with the same jaundiced eye as is appropriate for a used car salesman. I discounted some good evidence of severe problems there partly because Uganda's U.N. mission painted a serene postcard picture for us. Martha and I could have easily wound up like the Germans that attempted Spratly Islands a couple of years ago. Fortunately our story had a happier ending. About two years later, I telephoned the PTT in Kampala and was distressed to learn that the Minister of PTT who had granted us our licenses was dead and the genial Chief Engineer was now living in Paris. It is distressing to know that the fine people who we met are living in danger, if at all.

Next month's column will be about black market money, bribes and DXpedition ethics. Not operating ethics, but situation ethics.

If any readers are planning a DXpedition and want advice, I will be happy to help in whatever way possible. Just remember, DXpeditions can be a lot of fun without going to a top 10 country!

CANADA AND OTHER DX

Bob Nash, VE3KZ

It's a pleasure to join the gang at RADIOSPORTING for the first issue of the new year! Some of you may well wonder what that very untypical Canadian bird is doing at the head of this column written by the 'Contributing Staff - Canada'. Several thousand of you may find that he looks familiar and can check your incoming QSL's during the last year, and will find that same pelican featured prominently on one of your latest Caribbean acquisitions. I come to this task with a bit of recent experience from both ends of the Contest/DX game which I'll endeavour to share with you from time to time.

The next major competition of this season is the 1985 ARRL DX Contest and it seems appropriate to channel my mid-winter reminiscences to the 1984 contest, when I had my only opportunity, to date, to work its 'other end'. By the time February 1984 had rolled around, I had already logged over 20,000 QSO's at VP2KBZ since late August 1983, with another 6,000 to come in the last few weeks before my return to Canada at the beginning of March. One can assume that I had a pretty good idea, by then, of what conditions were like on all bands to Canada and the USA, from my hilltop in the middle of the Eastern Caribbean!

From my personal standpoint, I had at this point placed second in the '2-point' part of the Caribbean to NP4A and won a plaque for the CQWW Phone DX Contest, despite the lack of split-frequency capability. The CQWW CW DX had had to take a back seat to other commitments, making only 3,000 QSO's. I was going to be in VE for the phone portion of the ARRL DX so the CW portion was my last chance at a major contest and my last decent shot at a Class-A CW blowout!

The summary below shows the outcome. A little post-mortem is always useful if you don't overdo it. 80 was OK, but 160 was a disaster. If I could have done comparatively as well on 160, say 111/33, the score difference would have shrunk to 8 percent. I consider that the difference in multipliers on the other bands could have been avoided by better management the second day, equalizing the multiplier. This would have reduced the difference to 5 percent. After that, it's just those extra 200 QSO's on the high bands that Dave managed by his higher rate. Congratulations to K8CC. Hope we get a chance to do it again, Dave!

It is my contention that operating just outside the W/VE is a real Radiosporting event that can yield spectacular results using low caliber ammunition. The ARRL DX CW test has some unique features as far as the degree of competition is concerned. Looking back at last year's results one can see a 2:1 ratio between the top five phone scores but only 5:4 ratio between the top five CW scores! I have always been of the opinion that CW is a great leveler of differences. My experience with QRP both as an operator of a 5 watt station in most of the major contests and as a worker of many such has convinced me that many stations are almost as easy to work at this power level as with a kW. What I'm really saying is that a difference in signal power level of 1000:5 or 23 dB often goes almost unnoticed on CW, whether due to transmitter power or antenna inefficiency. This is a mode where a little frequency shift buys you a priceless amount of Signal/QRM compared to being zero-beat with the competition, whereas on phone only timing and QSB can help the QRPer. I can't recall how many times I worked dozens of weak CW signals just a couple of hundred Hertz off frequency while several zero-beat kilowatts almost blocked my receiver in their on-frequency feeding frenzy at the edge of my bandpass. It seemed as if the weaker stations were making greater use of their wits to make the QSO!

The other leveling factor is the sending speed of the operators you are working. No matter how you emulate the proverbial bat bent on infernal escape, the guys on the other end are, to a large extent, going to control your QSO rate. This seemed particularly true in the ARRL contest where an amazing number of stations were moseying along at 15 or 20 wpm, often using straight keys. Needless to say, if you have a choice in a pile-up, you come back to the faster stations, those being the ones you identify earliest. There were occasions, however, where

	Score	QSO's/MX	160	80	40	20	15	10
HR1DAP	3,772,680	4220/298	118/34	358/48	742/53	1071/54	979/56	952/53
	+11%	+7%	+5% +79	+31% -24	-2% +6	+2% +16	+6% +14	+2% +2 +2%
VP2KBZ	3,384,945	3959/285	66/26	470/49	702/52	927/51	862/55	933/52.

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]RUN
---PROGRAM FOR CALCULATION
OF GREAT CIRCLE DISTANCES
AND BEARINGS---

GREAT CIRCLE DISTANCES IN KM
SOUTHERN LATITUDES NEGATIVE
WESTERN LONGITUDES NEGATIVE
USE DEGREES AND DECIMALS
```

the entire pile-up resembled a turtle race. If you are a slow sender for whatever reason, make sure your calling sequence is a model of brevity, both to reduce the QRM and to expedite your chances of being the next lucky log entry!

A simple but efficient antenna system, well sited and coupled with whatever power you can muster, can produce results capable of pushing you and the competition to new heights. For those contemplating close off-shore participation, four charts are provided for representative 'hot spots', which attempt to analyze the appearance of the entire 'target' area by choosing an arbitrary point in each call area. The vertical angles are rounded to 2.5 degrees and represent simple ray-trace take-offs for the two primary propagation modes using F-layer single or multiple hops, tacitly ignoring E modes and combination modes. The lowest angle represents the likely mode used on the higher frequencies, the other angle most likely on the low bands, depending on cut-off frequencies and, lest we forget, the antenna pattern at the other end as well as at your end!

General observations:

1. For many locations you really don't need a rotator.

2. N/S orientation of the path gives longer openings.

3. E/W orientation of the path results in lower MUF's.

4. Don't neglect 160m. It may win the contest.

5. Don't be shy about asking for band changes. You need that multiplier.

6. Don't be super rare. Rare DX and contesting can be incompatible.

7. Plan well, enjoy yourself, get a good tan and Good Luck!

CANADIAN RECORDS ARRL DX COMPETITION

Category	CW			PHONE		
MULTI-SINGLE	VE6OU	1462500	81	VE1DXA	1908930	80
ALL-BAND	VE3IY	1296000	81	VE3BVD	1825920	82
28 MHZ	VE3KKB	94185	82	VE6WQ	650268	80
21	VE3BMV	201051	82	VE7IN	491892	81
14	VE7DIM	33661	82	VO2CW	139230	83
7	VE1AI	71622	80	VE7WJ	55266	80
3.5	VE1AXT	14784	81	VE3IKN	10260	84
1.8	VE1AXT	561	82	VE1YX	12696	84
QRP	VE3KKB	112125	81	VE3KKB	162060	81

Bob Nash, VE3KZ, VP2KBZ, etc. is enjoying a small ceremony of pouring a Colt 45 "champaign" into the Trophy he won in the Canadian Contest Championship. Bob is presently administering the Championship. Bob's scores from VP2KBZ during 1983 operation in CQ WW Contests helped the Ontario Contest Club to establish a new Canadian record of 17.5 million points in the Club Competition category, which was also second in the world among the DX clubs. VE3KZ presently holds Canadian records in Multi-Multi category on Phone and in QRP category on CW. Bob is the head of Technology Dept. and teaching at Humber College, Toronto.

ST.KITTS

TARGET	KM	AZ.	VERT.ANGLE	
W1	3250	N8W	5	17.5
W2	2900	N21W	7.5	20
W3	3150	N29W	5	17.5
W4	2350	N57W	10	25
W5	3900	N56W	2.5	12.5
W6	5850	N60W	7.5	12.5
W7	6350	N44W	5	10
W8	3300	N33W	5	17.5
W9	3700	N36W	2.5	12.5
WO	4250	N50W	10	20
VO	3500	N9E	2.5	15
VE1	3100	N3W	5	17.5
VE2	3400	N12W	5	15
VE3	3700	N22W	2.5	12.5
VE4	4800	N33W	10	17.5
VE5	5350	N35W	7.5	15
VE6	6000	N35W	5	10
VE7	6450	N42W	5	10
VE8	7350	N2W	2.5	10
VY1	7650	N28W	2.5	7.5

PANAMA

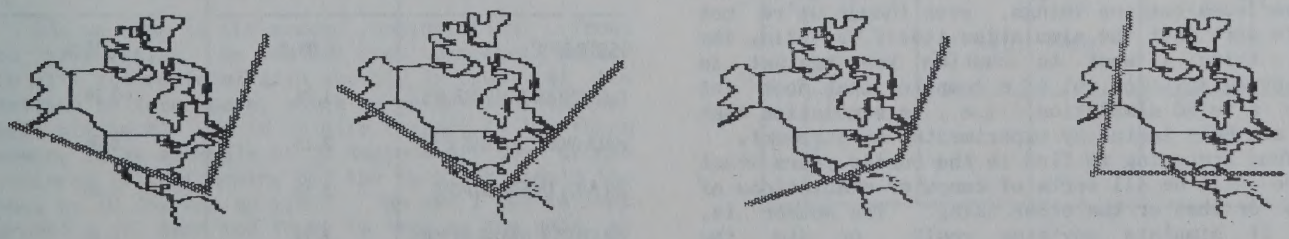
TARGET	KM	AZ.	VERT.ANGLE	
W1	4250	N13E	10	20
W2	3600	N8E	2.5	12.5
W3	3550	NOE	2.5	15
W4	2050	N6W	10	27.5
W5	3150	N31W	5	17.5
W6	4750	N49W	10	17.5
W7	5800	N35W	7.5	12.5
W8	3500	N4W	2.5	15
W9	3750	N11W	2.5	12.5
WO	3700	N28W	2.5	12.5
VO	4900	N24E	10	17.5
VE1	4250	N18E	10	20
VE2	4300	N10E	10	20
VE3	4200	NOE	10	20
VE4	4800	N16W	10	17.5
VE5	5200	N21W	7.5	15
VE6	5800	N24W	7.5	12.5
VE7	5950	N34W	7.5	12.5
VE8	8200	NOE	7.5	10
VY1	7550	N25W	2.5	7.5

BERMUDA

TARGET	KM	AZ.	VERT.ANGLE	
W1	1550	N11W	17.5	35
W2	1300	N39W	20	40
W3	1700	N50W	15	30
W4	1800	S79W	12.5	30
W5	3050	N79W	5	17.5
W6	4950	N72W	10	17.5
W7	5100	N53W	7.5	15
W8	1900	N56W	12.5	30
W9	2350	N56W	10	25
WO	3200	N68W	5	17.5
VO	1900	N20E	12.5	30
VE1	1400	NOE	20	35
VE2	1750	N18W	15	30
VE3	2150	N35W	10	27.5
VE4	3350	N44W	5	17.5
VE5	3900	N45W	2.5	12.5
VE6	4600	N43W	10	17.5
VE7	5150	N51W	7.5	15
VE8	5650	N2W	7.5	12.5
VY1	6100	N32W	5	10

HAWAII

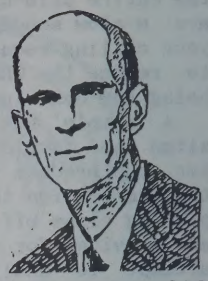
TARGET	KM	AZ.	VERT.ANGLE	
W1	8150	N46E	7.5	10
W2	7800	N52E	2.5	7.5
W3	7300	N53E	2.5	10
W4	7350	N68E	2.5	10
W5	5850	N63E	7.5	12.5
W6	3950	N59E	2.5	12.5
W7	4250	N36E	10	20
W8	7050	N54E	2.5	10
W9	6650	N52E	5	10
WO	5700	N57E	7.5	12.5
VO	9050	N42E	5	10
VE1	8500	N47E	7.5	10
VE2	7950	N46E	2.5	7.5
VE3	7250	N46E	2.5	10
VE4	6000	N42E	5	10
VE5	5500	N39E	7.5	12.5
VE6	5100	N32E	7.5	15
VE7	4250	N34E	10	20
VE8	7650	N7E	2.5	7.5
VY1	4900	N10E	10	17.5



W2PV ON ANTENNAS

PART 2

Yuri Blanarovich, VE3BMV



The book by Uda and Mushiake of Tohoku University which was published in 1954 is an excellent thing to get into the detailed mathematical theory of these antennas. It still stands as an excellent piece of work. Walkinshaw in England back in 1946 computed (with very good and very limited computers which they could only do 36 element matrix inversions) a few simple antennas. He published his results, later republished in the book by King of Harvard.

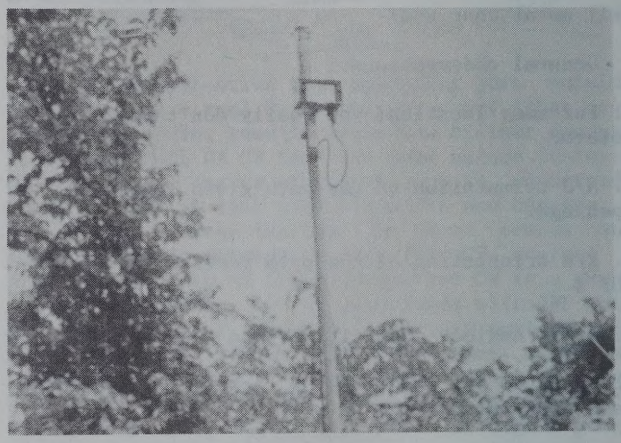
For those of you interested in what happened in King's book, King copied some of the work out of Walkinshaw incorrectly and it is still reproduced incorrectly. However, Walkinshaw did the business first and showed how to go about it. But that's a long time ago. In the meantime, there still haven't been any detailed publications that I'm aware of, that we can really latch on to, because we don't use those theoretical simulated cylinders; we use something different. We use things made out of real, tapered aluminum elements, which are different and will be discussed later.

COMPUTER SIMULATION

- THEORETICAL MODEL
  - UDA-MUSHIAKE
  - WALKINSHAW
  - KING
- CAN NOW EXPLORE ANY CONFIGURATION OF ELEMENTS AND HEIGHTS
- RELATIVE COMPARISONS HIGHLY ACCURATE
- ABSOLUTE PERFORMANCE ACCURATE, BUT REQUIRES VALIDATION

The beauty of any computer simulation is that you can explore a wide range of configurations. You can make a relative comparison between two things extremely accurately. There is no problem in saying that something loses a hundredth of a decibel if I do something to it. You could never measure that before. So we can make detailed comparisons between things, even though we're not quite sure that the simulation itself is valid. The one thing I want to caution you against is believing anything out of a computer that does not have a valid simulation, i.e., a simulation that has not been tested by experimental measurement.

You are going to find in the coming years that there will be all sorts of computer simulations of this or that or the other thing. The hooker is, did it simulate anything real? Or did the programmer make approximations that are not valid or justified? And let me say that everything that I have done you have to criticize in the same way. Is it valid? And of course, as time has gone by, I have been able to validate more and more of this thing. I have come to believe almost everything that has happened on that computer simulation. However the models that I use do have some simplifications. Just as the Yagi and Uda's did.



Tha matching transformer for Beverage at W2PV

The simplifications are: elements behave for mutual coupling very much like infinitesimal dipoles. There is not much difference between an infinitesimal dipole and a real one in terms of the mutual coupling far away. But if you bring things very close together, it will obviously fail. But we don't do that.

Those approximations are in there and they probably affect the actual currents about four to five percent, but that is not a major problem. What you do in an experimental situation will affect it more than that.

But I want to caution you to always remember validation on anything you have read. "Did that fellow ever get it checked anywhere or not?" That's the important thing.

GAIN (DIRECTIVITY)

REFERENCE ANTENNA	GAIN/ISOTROPIC	GAIN/HALF-WAVE DIPOLE
ISOTROPIC	0.00 db	-2.15 db
ELEMENTARY DIPOLE (FS)	1.76	-0.39
HALF-WAVE DIPOLE (FS)	2.15	0.00
DRIVEN IMAGE DIPOLE	5.15	3.00
WATTLESS IMAGE DIPOLE	8.15	6.00

Now let me discuss gain. All of you know what gain is. I have an antenna with a gain of 10 dB. What is that gain relative to? You'll find that some are relative to isotropic radiation, some to the elementary dipole, and some to a real half-wave dipole. And, of course, when you get into an antenna over the ground, you have to worry about its image in the ground. Do you measure the gain relative to a dipole which also has an image or a free-space dipole or whatever?

One word of caution. An isotropic radiator is a theoretical "device" only. There is nothing physically possible that can do what this antenna theoretically does: radiate equally in all directions. Any dipole that we put up has a null on the end of it. The dipole has a larger gain in the direction it transmits by about 2 decibels. This shows that a real half-wave dipole in free-space will have 2.15 dB of gain over that isotropic radiator.

It has been customary for some manufacturers to quote their gains relative to isotropic because it makes a bigger number. It doesn't change the antenna a bit. It is most useful to compare it to a real half-wave antenna that we might build. In my discussion, I will refer to gain compared to the half-wave dipole. Let's find out what this really is, rather than what it might be billed as.

When I get the things over the ground, I usually use the 3 dB number. In the computer, I'm also driving the image in the ground, but in real life you don't have to do that. In real life you'll get a gain of 3 dB more than that, but not relative to a dipole over the same ground. If this sounds confusing, forget it. The point is that the gains are all with respect to different references. Be careful next time you hear about gain as to whether it is with respect to a dipole in the same location or with respect to a dipole in free space or what. There are big differences in numbers, probably bigger than the differences in the gains of the antennas themselves.

FRONT/BACK RATIO

- DEFINITION:

  FRONT LOBE MAX. /REAR "LOBE" EQUIVALENT

- FREE SPACE:

  $F/B = \text{db GAIN } (0^0) - \text{db GAIN } (180^0)$

- OVER GROUND:

  $F/B = \text{MAX. db GAIN } (\theta) - \text{db GAIN } (180^0 - \theta)$

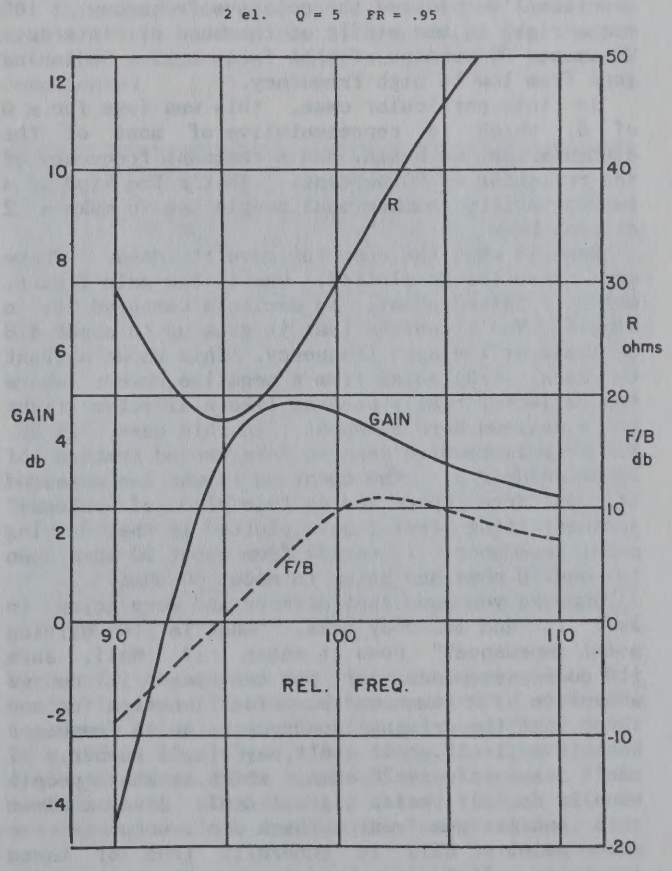
Now we come to the second consideration: front to back ratio. Do you all know what that means? Is it the ratio of gain exactly in front of the antenna in free space, which we never have, to that off its back? Or is it with respect to the thing coming in at an angle of 10 degrees off the ground compared to that coming off the back, or should the back be 10 degrees up also? The one I use is over ground, to have the front to back as the gain at the maximum lobe in the front, whatever its angle theta is, to the one in the back which is 180 theta degrees. So it is symmetrical. I think this is the most valid method. But I can quote you a bigger number if I use some other definition. It's a little tricky but I think this is the one that's most realistic for us.

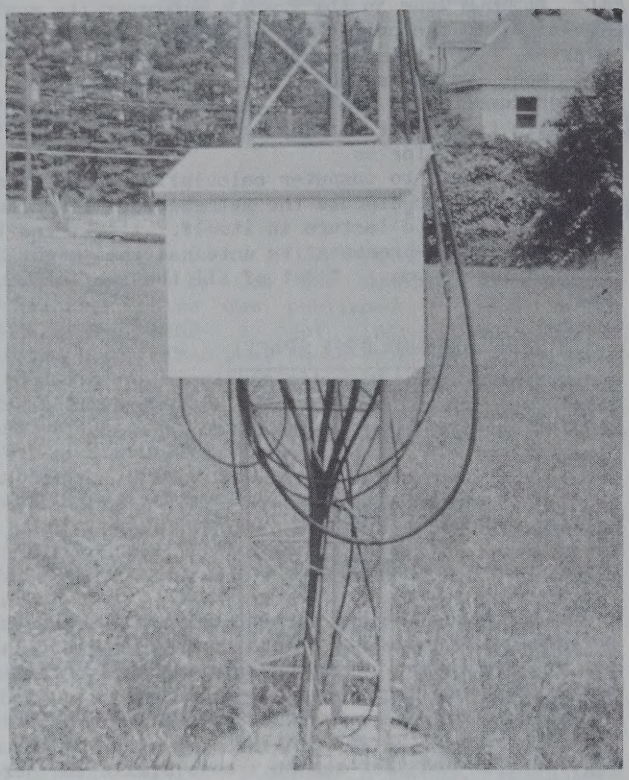
Now we come to computer calculations, or runs. I'm not going to discuss the mathematical formulas. That's a separate lecture in itself. I've tried to pick out some representative antennas that might be interesting to you. First of all the two element yagi.

"BARE" ANTENNA (FREE SPACE)

- YAGI-UDA
  - 2 ELEMENT
  - 3 ELEMENT
  - 7 ELEMENT

We'll model the two element yagi on 40 meters. We could also model it on the higher frequencies, but you might want a few more elements because it's easier to do up there. I've picked out 2, 3 and, just for a big one, 7 elements, which is exactly what I have. I've got a Wilson 20 meter beam on a 58 foot boom and that's what I have simulated here with 7 elements. This covers the range of activity that we would be interested in. Mind you, these are calculations of what these antennas would do in free space; not over this earth. Let's start with air first so that you can see what happens.





Switching box at the base of one of the towers.

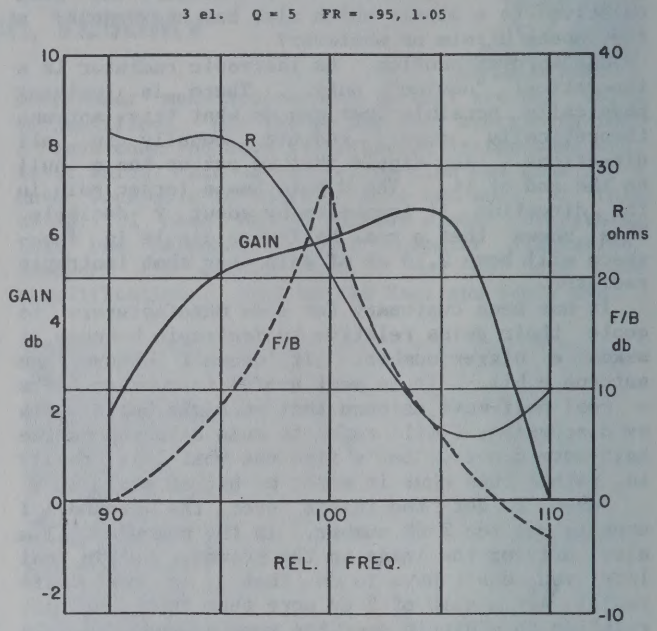
Here's what a 2 element beam really does according to the computer in free space. On the abscissa I've plotted the relative frequency. 100 means right in the middle of the band of interest. 90 means 90 percent of that frequency. So tuning goes from low to high frequency.

In this particular case, this was true for a Q of 5, which is representative of most of the elements that we build, and a resonant frequency of the reflector of 95 percent. That's the kind of a garden-variety number most people use to make a 2 element beam.

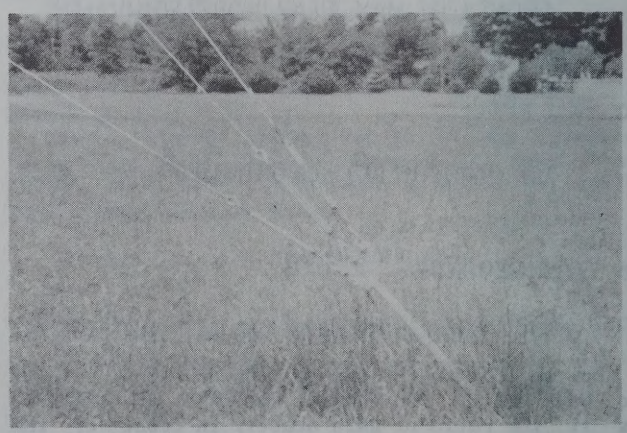
Here is what the computer says it does. There are three things plotted. One is the gain figure, which I talked about, in decibels compared to a dipole. You'll notice that it goes up to about 4.8 decibels at the best frequency. This shows a front to back (F/B) going from a negative number where the reflector really behaves like a director right to a maximum here of about, in this case, 11 dB. Not very impressive when we toss around numbers of 20 or 30 dB F/B. The question is who has measured it, in free space and on this kind of antenna? Another thing that I have plotted is the driving point impedance. It varies from about 30 ohms down to about 8 ohms and on up to about 50 ohms.

Suppose you made that antenna and were going to sell it and somebody asks, "what is its driving point impedance?" Does it match 1:1? Well, sure it does someplace, or you can make it do so someplace by a gamma match. You'll notice for one thing that the driving impedance is quite frequency sensitive itself. It isn't any single number. I can't say this is 20 ohms, which is what people usually do. It varies a great deal. Also, maximum gain and maximum front to back don't occur at the same point. This is generally true of these antennas. It is very hard to make the maximum F/B and gain peak at the same frequency. That's a design question that will be discussed later.

Already, even a 2 element beam is not as simple as we first thought. It doesn't have a single driving point impedance, nor a single gain, nor a single front to back. In fact, it's very hard to characterize this in a single parameter.



Now let's consider the 3 element beam. The resistance curve goes in the other way. It becomes very low, only 6 ohms in this case, at a frequency on the high side. But it has similar characteristics. The F/B goes up to a very high peak, 28 decibels. This is a very good F/B ratio for a 3 element beam. Generally this is true. You can get a good front to back at one frequency on the 3 element beam, maybe in the middle of the band, but certainly not over the whole band. However, we rarely measure it over the whole band. In fact, it's not easy to measure F/B because you get into trouble with scattering effects due to the direct radiation and so on.



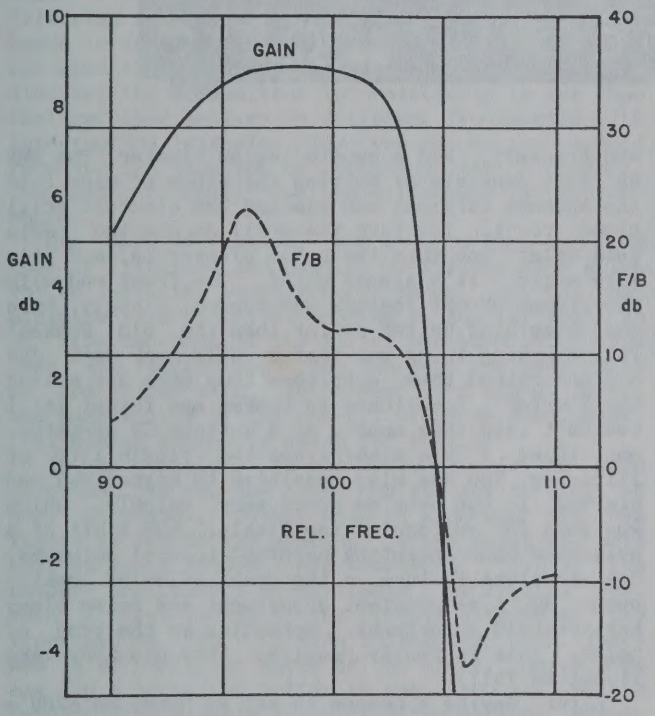
Proper way of attaching the guy wires.

In this case there is no interference from the ground, towers, or buildings. It is in free space and that's how the antenna would behave if you were lucky. It has a gain of just under 6 dB. This is

the antenna that some manufacturers might advertise as having 10 dB gain because that forces you to buy it. You might even believe it. But I'm talking "real" decibels here instead of "advertising" decibels. I'm saying that it's still a very good beam. 6 dB is the real thing. You 'll find that the battle of the dB's is what we are really all talking about in the long run, but they're real dB's, and don't be fooled.

It is a very good antenna. It generally has a gain that rises a little bit at the high end of the band and this is characteristic of everything. If you get a 3 element beam and tune across the band, it usually has a little bit more gain on phone than on cw. It will always be so if you put them right in the middle unless you tune the beams well.

7 el. Q = 7 FR (Wilson)



What about the 7 element beam? This is actually a simulation of the Wilson 7 element beam and it becomes quite complicated. F/B ratio is not a simple curve anymore. It doesn't give you a simple conceptual feel anymore. The gain has increased which we all expected, but it may or may not improve the F/B ratio. In this case, the F/B is only about 12 dB. As a matter of fact, I was rather pleased when I first got this out of the computer because that is what I had measured on the Wilson. I was very disappointed in the single Wilson beam on its F/B. It wasn't nearly as good as the Telrex or others. This doesn't necessarily mean it is a bad beam because it was not too bad down here (refers to one of the graphs), but it wasn't tuned down there. The general conclusion that I have to make is that Wilson never tunes any of his stuff. He sells aluminum and he's very good at that and you should buy it for that. Then trim it to the right dimensions, ultimately.

Well, now you have seen what these antennas do in free space. But we don't have things in free space at all. I was curious what makes a good beam. Is it a long boom? A large number of elements? You've heard that kind of operation, too. Before we look at what the computer says, let's summarize what has been covered.

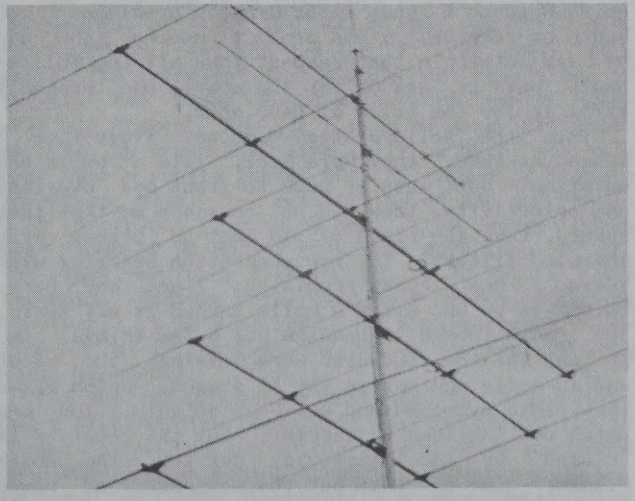
YAGI - CONCLUSIONS

- 2 el. GAIN~4.5 DB f/b~11 DB
- 3 el. GAIN~6 DB f/b~30 DB
- 7 el. GAIN~9 DB f/b~25 DB

>3 ELEMENTS VERY COMPLICATED - NEVER OPTIMIZED

First of all, a 2 element beam has a "real" gain of about 4.5 dB and a front to back ratio in the neighborhood of about 11 dB in free space. The 3 element beam: 6 dB; 30 dB F/B, maybe. Longer ones may not have a better F/B, and usually don't.

Furthermore, I'll assert that anything over 3 elements is usually a very complicated problem. I've spent a lot of computer time trying to optimize the antenna by moving elements around. It's a very long job. I don't know if all of you are aware of how to tune a circuit with more that 3 knobs. You basically can't optimize it. You can tune a pi network output, but put something that requires half a dozen and you'll never be able to do it because you move one a little bit and that one a little bit and you'll eventually get caught on the wrong side of tuning. It is quite complicated.

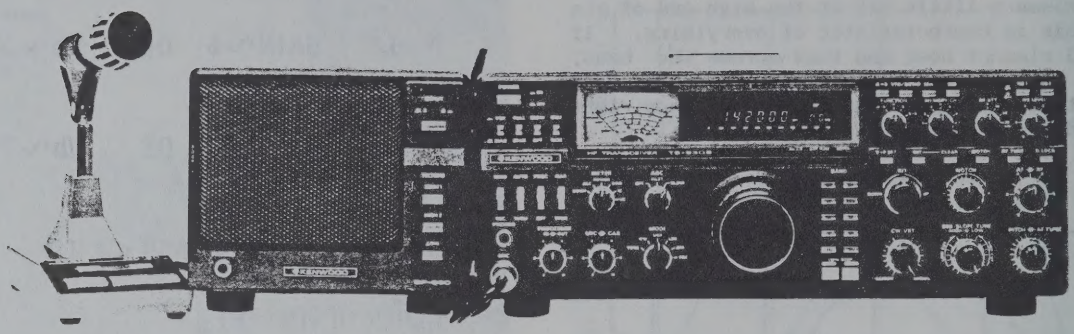


View of the top of the "Christmas tree" - Big Bertha loaded with stacked beams at W2PV. From the top down: 6 el. 6m Yagi, 2 m long boom Yagi, 5 el. 20 m, 5 el. 15 m, 5 el. 10 m beams, partial view of 3 el. 40 m Yagi. This has been a workhorse at Jim's installation, complete all band system on one rotatable tower. It survived the worst storms.

(To be continued.)

A CONTESTER'S LOOK AT KENWOOD'S TS930S

Yuri Blanarovich, VE3BMV



My workhorses here for quite a while were the Drake twins, R4B, T4XB and later on, another R4C complemented the pair. They were modified and improved just like a souped-up car for the Indy 500. I also built the switching box, so I can use two receivers with two ears to hunt for multipliers, or listen on two frequencies simultaneously. Either receiver VFO could be used to transmit. This is a good arrangement and very useful in contests, especially where split frequency operation is required. You can monitor your receiving as well as transmit frequency. You can also tune around while you are waiting in line to work DX1A through the Californian curtain. I managed to get about 20 dB more gain at the front end of Drakes by modifying the preselector circuit, which was helpful on 160 m with receiving antennas, or 10 m when the band was going out or when you beam for JAs or close to North. The band is quiet and every bit of receiving gain helps. I knew about Drake's problems - bad audio on receive, a bad product detector (the old R4 was better in that respect than all the follow-ons), but it was OK for the money and probably still is for the price of used gear.

Then the "solid states" came on. Every time I looked at them, they were nice, lots of bells and whistles, but when it came to front end overload and selectivity, they did not convince me that they should take the place of old beat-up Drakes with Sherwood filters. The new generation starting with Yaesu FT-One looked promising. I had one here, turned it on and after a while turned it off again. The radio looked impressive but a few things, important for the contester were missing. The notch was in audio and not in the IF stages, which makes the radio overload and cut back on gain. You can notch out the tone or carrier, but the receiver is "closed" by the interfering carrier. The noise blanker did not take out the woodpecker or power line noise. You couldn't get your finger between the levers of the switches and knobs below. On transmit they sounded like the old carbon microphones. The FT-102 did not have any of those problems and looks like a better performer for a lot less. It looks like FT-980 is the successor of FT-One. I haven't had one in my hands yet, so I can't comment.

Then the ICOM 740 came, and the first thing that impressed me was the audio quality, both on receive and transmit, and a superb noise blanker. The BMV NB test consists of putting the piece of wire into the antenna terminal and placing the electric drill close to it. You turn the drill on and the radio goes wild; you turn the noise blanker on, and it's like magic - it's almost quiet. The front end with the preamp ON-OFF feature was superb. Finally, here was something better by far than the old Drakes! The shocking thing was that I could hear weak JAs and understand them, even when they were not moving the S-meter! I switched to Drakes and forget it! I couldn't take them apart. As a serious CW operator, one thing I was missing was the flexibility of filtering. 740 was also sensitive to higher SWR and started to cut back on power very quickly, which was good for protecting the finals, but a bit of a nuissance when operating barefoot to real antennas. One excellent feature is the combination of continuous AGC time constant adjustment and noise blanker treshold adjustment. Depending on the type of noise, this is really required. (Why did they take it out on 751?)

After having a chance to set my hands on K2UU's Signal One CX-11, I wanted it! That was the dream rig! I liked the performance and features, especially the capability to listen on two frequencies simultaneously. I was saving money and looking for a used one. In the meantime I visited Ken, KN3O and he had his operating desk cluttered with CX11, Mil-Spec and TS930S. What a wonderfull oportunity to compare them and do the BMV acid test on the front ends.

What is the acid test for front ends? Well, not having sophisticated equipment but wanting to evaluate the front ends, I devised a simple but practical test, closely approximating a real life situation. You read about the measurements using 20 kHz spacing and figures on overload and intermods. But what the contester wants to know is how close can he get to that 40 or 50 dB over S-9 signal without being bothered by him. So the acid test goes like this: you connect the receiver under test to the real antenna, possibly the beam that is tuned and has an impedance around 50 Ohms, to reduce the effect of detuning on the front end circuits. So you tune your receiver to the frequency, where your SWR dips close to 1:1. Then you fire up your spare transmitter to another antenna or just a piece of wire, dipole, etc. Now you tune

your receiver to empty space on the band (around your "good" frequency) and tweak all the knobs for the mode you want to do the test on, lets say USB. Make sure you do not have any signals interfering with your reception - the S-meter should be just moving from the backgroung noise on the band. Now you tune your transmitter to the same frequency in the CW mode and set the power level to, let's say, 40 dB over S-9 showing on your tested receiver. That would be our typical W5 coming through off the back of the beam. Now you start moving your transmit frequency away from the receiver frequency and you observe your S-meter and receiver audio. (Or you can leave the TX there and move the receiver, depending on what has a more accurate dial.) Make note of how far you have to go so the S-meter drops down to zero or S-1 (or any value you like). Do it on both sides, low and high end. (Some receivers could behave differently depending on their IF filtering arrangement.) You make note of the difference in frequency between the maximum signal level and when the S-meter drops down to minimum. You can also key the transmitter intermittently to see how the receiver behaves on different frequencies with interrupting signals. Now you check the second receiver in question by repeating the procedure. You can very easily see the difference in performance.

One word of caution, you have to keep in mind that IF filtering and quality of filters have a lot to do with the overall performance. But you can minimize this effect by looking at how far you can go from the edge of the filter passband until you lose the "scratching." You can scan the pass band of the filter with, let's say, S-9 signal level, and make a note of the cut-off or 60 dB down point. (Calibrator signal is handy for that.)

In my opinion, to the contester it is more important to see how close can you get to that 40 over 9 signal, rather than to know what the dBm figure is for 20 kHz spacing. After doing the acid test on Ken's TS930S I was impressed. This is the number one feature on any radio I am looking for. When I first looked at the circuit diagram of the front end on '930, it didn't look like much. There was a RF amplifier ahead of the mixer, which some say is a no-no (or better to say, you get better results with signals going from the antenna terminal to the mixer), but I was amazed, those Kenwood designers probably did not know about that rule and designed a truly remarkable front end!

So the front end, the most important thing, passed the acid test with excellent marks. Then playing with all those radios, I decided that the 930 was IT! The front panel design and function of the controls, with extra flexibility for the demanding CW operator, was the deciding factor. I have heard that many contesters really liked the TS830, but I never had the chance to use one. (One, and especially a married one, can buy only so many radios.)

When my own 930 arrived, it was put to work immediately. I always buy the service manuals, and this is one of the things I am looking for with a new radio. I like to service and modify them so they can be really souped up for the copetitive fire. (Kenwood manuals are excellent!)

The first thing I did was to compare the front ends of the 930 and the IC740. I expected the 740 to be perhaps a bit better, especially with the pre-amp turned off. It was very close, but still the 930 seemed a bit better. (Please take this with a grain of salt. This is subjective opinion and the result of tests on my particular radios. More "scientific" tests would be done in the lab with good test equipment. DL1BU does these types of tests and we are trying to get the articles from him.)

The overall feeling I get from the 930 is probably the same as when you old-timers got your first Collins S-lines. (I was only reading about them, we had to "brew" our own stuff back in the old country.) It is the feeling of a good solid instrument, which is well designed, with dials that mean calibration and are there not just for pretty looks.

To finish off the front end; there is an attenuator which is calibrated in steps of 10 dB, from 0 to 30 dB, and it is accurate. Normally you would suspect something fishy with the front end if the radio has an attenuator, but here, there is no problem, and it is a useful thing; especially when you get overload or static level on the band is too high, it helps to turn the attenuator on and reduce the racket. There is no tuning required to peak the pre-amp (or preselector), the tuned circuits are tuned and broadbanded for 1 MHz band segments and they are close to 50 Ohm impedance. There is no trimmer to tweak the input impedance. On receive, the signals are bypassing the antenna tuner. So the tuner does not work on receive. You have to keep this in mind if you are using a weird antenna. (See my notes on SWR in the Dec. issue of RADIOSPORTING.) Most of the antennas are around 50 Ohm so there is no problem. For the demanding contester (and one familiar with tuning the broadband circuits) perhaps tweaking the input circuits around ham bands could help a bit with sensitivity and rejection of out of band strong signals.

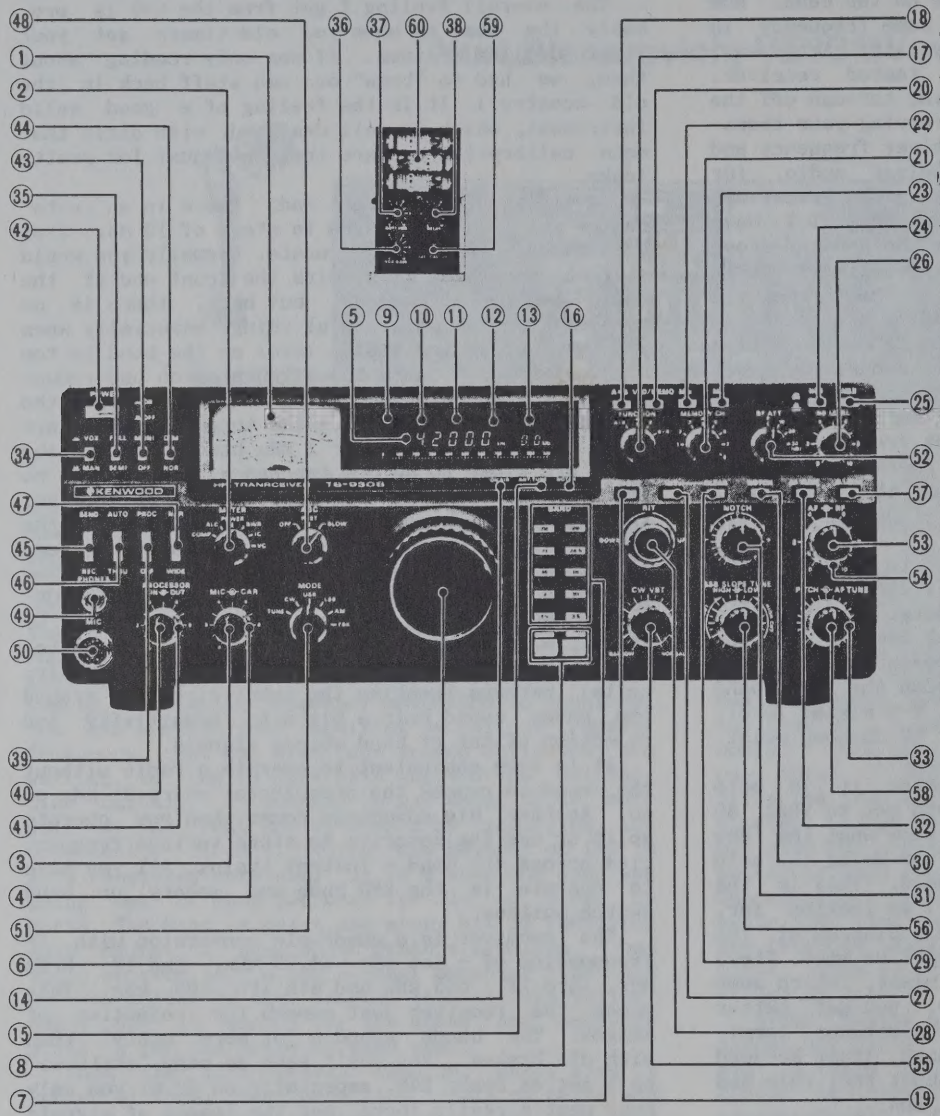
It is very convenient to operate a radio without the need to repeak the preselector every 25 kHz or so. Another big advantage comes when you operate split or use the memories to store various frequencies across the band - instant tuning. All you have to operate is the VFO knob and memory or band switch buttons.

The receiver is a quadruple conversion with IF frequencies of - 1st IF: 44.93 MHz, 2nd IF: 8.83 MHz, 3rd IF: 455 kHz and 4th IF: 100 kHz. This makes the receiver just superb for rejection of images. The bands sound a lot more "empty" than with old Drakes. You don't hear as many "stations" as I get on Drake R4B, especially on 40 m; you only hear what's really there, not the images of signals somewhere else. The sensitivity on SSB and CW is 0.25 microvolt (1.8 to 30 MHz), the image ratio more than 80 dB and IF rejection more than 70 dB. The receiver tunes from 150 kHz to 30 MHz in 1 MHz segments. Besides being used as a general coverage receiver, it is also useful as a measurement instrument, an IF receiver for VHF converters (FM mode would be handy).

The earlier production units (up to SN 3100.000) had a problem with leakage of carrier around the IF stages. When you turned the RF gain down you could hear the carrier coming through. The shielding was improved and gain distribution accros the receiver changed. This eliminated the leakage problem, improved the dynamic characteristics of the receiver and lowered the internal noise.

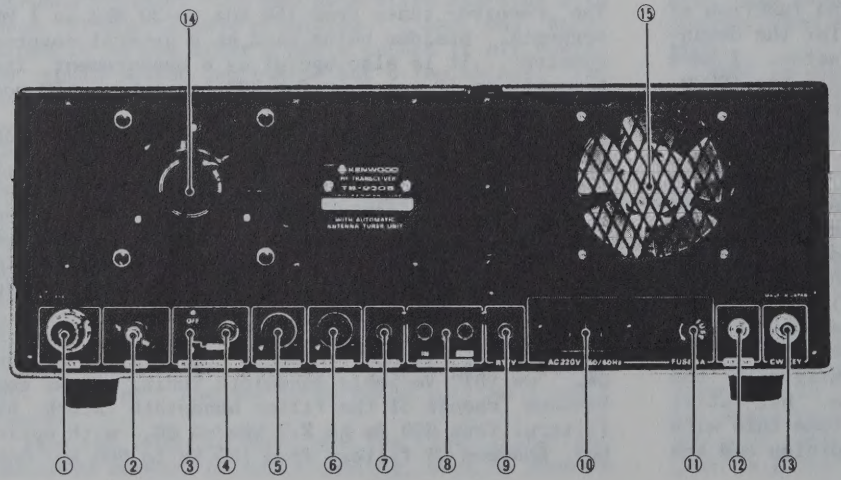
The real gem on this receiver is the IF tuning flexibility. It has separate controls for SSB and CW. "CW VBT" Variable Bandwidth Tuning allows continuous change of the filter bandwidth (stock SSB filters) from 600 Hz to 2.7 kHz/-6 dB, with optional Kenwood CW filters from 150 Hz to 500 Hz/-6dB.

TS-930S CONTROLS AND THEIR FUNCTIONS



FRONT PANEL

① Meter
② METER switch (T)
③ MIC (microphone gain) control (T)
④ CAR (carrier level) control (T)
⑤ Frequency display
⑥ Tuning knob
⑦ BAND switch
⑧ 1 MHz step switch
⑨ D. LOCK switch
⑩ VFO A indicator
⑪ VFO B indicator
⑫ MEMO (memory) indicator
⑬ RIT indicator (R)
⑭ ON AIR indicator (T)
⑮ ANT TUNE (antenna-tuner) indicator (T)
⑯ NOTCH indicator (R)
⑰ FUNCTION switch
⑱ A = B switch
⑲ TF-SET switch
⑳ VFO/MEMO (memory) selector
㉑ MEMORY CH selector
㉒ MIN (memory write) switch
㉓ MR (memory recall) switch
㉔ NB 1 (noise blanker 1) switch (R)
㉕ NB LEVEL control (R)
㉖ NB 2 (noise blanker 2) switch (R)
㉗ RIT switch (R)
㉘ RIT control (R)
㉙ RIT-CLEAR switch (R)
㉚ NOTCH switch (R)
㉛ NOTCH control (R)
㉜ AF TUNE switch (R)
㉝ AF TUNE control (R)
㉞ VOX switch (T)
㉟ CW break-in selector (T)
㊱ VOX GAIN control (T)
㊲ ANTI VOX control (T)
㊳ DELAY control (T)
㊴ PROC (processor) switch (T)
㊵ PROCESSOR-IN (input level) control (T)
㊶ PROCESSOR-OUT (output level) control (T)
㊷ POWER switch
㊸ MONI (monitor) switch (T)
㊹ DIM (dimmer) switch
㊺ Standby switch
㊻ Auto Antenna Tuner switch (T)
㊼ NAR/WIDE filter bandwidth selector (R)
㊽ AGC switch (R)
㊾ PHONES (headphones) jack (R)
㊿ MIC (microphone) connector (8 Pin) (T)
(51) MODE switch
(52) RF ATT (RF attenuator) switch (R)
(53) AF (AF gain) control (R)
(54) RF (RF gain) control (R)
(55) CW VBT control (R)
(56) SSB SLOPE TUNE control (R)
(57) DIAL LOCK switch
(58) PITCH control (R)
(59) CAL (marker) switch (R)
(60) Battery (memory backup) compartment



① ANTENNA CONNECTOR
② GND (ground terminal)
③ RX. ANT output switch
④ RX. ANT terminal
⑤ X. VERTER (transverter) terminal
⑥ REMOTE CONNECTOR
⑦ IF OUT jack (R)
⑧ PHONE PATCH jacks
⑨ RTTY KEY jack (T)
⑩ Power connector
⑪ AC FUSE
⑫ EXT. SP (speaker) jack (R)
⑬ CW. KEY jack (T)
⑭ Cooling fan (final section)
⑮ Cooling fan (power supply)

TS-930S SPECIFICATIONS

[GENERAL]

Transmitter Frequency Range:	160 m Band 1.8 ~ 2.0 MHz 80 m Band 3.5 ~ 4.0 MHz 40 m Band 7.0 ~ 7.3 MHz *30 m Band 10.1 ~ 10.15 MHz (10.0 MHz WWV) 20 m Band 14.0 ~ 14.35 MHz *17 m Band 18.068 ~ 18.168 MHz 15 m Band 21.0 ~ 21.45 MHz *12 m Band 24.89 ~ 24.99 MHz 10 m Band 28.0 ~ 29.7 MHz
Receiver Frequency Range:	150 kHz - 30 MHz
Mode:	A3J (USB, LSB), A1 (CW), F1 (FSK), A3 (AM)
Antenna Impedance:	50 ohms
With AT-930 antenna tuner	20 - 150 ohms (80 - 10 meter Amateur bands only)
Power Requirement:	120/220/240 VAC, 50/60 Hz
Power Dissipation:	Max. 510 W during transmission, 80 W during reception
Dimensions:	374(14-3/4")W × 141 (5-9/16")H × 350(13-13/16")D mm (inches)
Weight:	With antenna tuner: Approx. 18.5 kg (40.8 lbs) Without antenna tuner: Approx. 16.8 kg (37.0 lbs)

[TRANSMITTER]

Final Power Input:	SSB/CW/FSK 250 W AM 80 W
Carrier Suppression:	Better than 40 dB
Unwanted Sideband Suppression:	Better than 50 dB (with 1 kHz modulation)
Harmonic Content:	Less than −40 dB
Audio Frequency Response:	400 - 2,600 Hz/−6 dB
Modulation:	SSB: Balanced modulation AM: Low level modulation (IF stage)
FSK Shift:	170 Hz
Modulation Distortion:	Less than −31 dB
Microphone Impedance:	500 ohms or 50 kohms (Connector - switchable)
ALC Input:	−10 V DC MAX
Linear Amplifier Switching:	200 V DC MAX 100 mA

[RECEIVER]

Circuitry:	Quadruple conversion
Intermediate Frequencies:	1st IF: 44.93 MHz 2nd IF: 8.83 MHz 3rd IF: 455 kHz 4th IF: 100 kHz
Sensitivity (at 10 dB S+N/N)	
150 - 500 kHz:	Less than 1 μV for SSB, CW and FSK Less than 10 μV for AM
500 kHz - 1.8 MHz:	Less than 4 μV for SSB, CW and FSK Less than 32 μV for AM
1.8 - 30 MHz:	Less than 0.25 μV for SSB, CW and FSK Less than 2 μV for AM
Image Ratio:	More than 80 dB (1.8 MHz ~ 30 MHz)
IF Rejection:	More than 70 dB (1.8 MHz ~ 30 MHz)
Selectivity (W-wide, N-narrow filter selection)	
SSB, CW(W), FSK(W), AM(N):	2.7 kHz/−6 dB, 4.0 kHz/−60 dB
CW(N), FSK(N):	Without optional filter: same as CW(W), FSK(W) With optional YG-455C-1: 500 Hz/−6 dB, 820 Hz/−60 dB With optional YG-455CN-1: 250 Hz/−6 dB, 480 Hz/−60 dB With optional YK-88C-1: 500 Hz/−6 dB, 1.5 kHz/−60 dB
AM(W):	Without optional filter: 6 kHz/−6 dB, 18 kHz/−60 dB With optional YK-88A-1: 6 kHz/−6 dB, 11 kHz/−60 dB
SSB Slope Tune:	High-cut: More than 1500 Hz shift/−6 dB Low-cut: More than 700 Hz shift/−6 dB
CW VBT	
CW(W), FSK(W) AM(N):	600 Hz ~ 2.7 kHz/−6 dB
CW(N), FSK(N):	Without optional filter: same as CW(W), FSK(W) With optional YK-88C-1 and YG-455C-1 installed: 150 Hz ~ 500 Hz −6 dB
AM(W):	With optional YK-88A-1: 4 kHz ~ 6 kHz/−6 dB
Frequency Stability:	Within ±200 Hz after turn-on Within ±30 Hz any 30 minute period there after at constant temperature
Frequency Accuracy:	$\pm 1 \times 10^{-5}$ or better (at normal temperatures)
RIT Variable Range:	±9.99 kHz
Notch Filter Attenuation:	More than 40 dB
Phone Patch Output Z:	600 Ω
Audio Output Power:	More than 1.5 W across 8 Ω (at 10% distortion)

AT-930 (Automatic Antenna Tuner)

Frequency Range:	Amateur bands from 80 ~ 10 m
Input Impedance:	50 Ω, unbalanced
Output Impedance:	20 ~ 150 Ω unbalanced
Insertion Loss:	Less than 1 dB at 3.5 MHz (at optimum match)
Through Power:	150 W max.
Motor Stop SWR Value:	Less than 1.2

*Will transmit on the new 30, 17, and 12 meter bands. Lock-out circuitry installed to prevent accidental transmission before government amateur authorization.

NOTE: The circuit and ratings may change without notice due to developments in technology.

This is continuous and is achieved by shifting the bandpass curves of 2nd and 3rd IF filters over each other and it is done with single knob control. On SSB the selectivity adjustment is achieved by setting two concentric controls - HIGH and LOW. The HIGH knob "moves" the high edge from about 2.7 kHz/-6 dB down and the LOW knob moves the low edge of the bandpass up towards higher frequencies. This allows custom tailoring of the bandpass curve and selective rejection of nearby signals. If you grab both knobs together and turn them, it is your "bandpass" tune as we know it from other radios.

The auxiliary filters can be switched in by pressing the WIDE - NAR switch to narrow. Different filters are switched with the mode switch, i.e., CW filters are activated in CW position. The switching is done with diodes.

The Kenwood filters are great, but the 8 pole Fox-Tango filters are better. They are a bit bigger and a bit of work is required to install them, but it is worth it! I wish there was more room for extra filters or better and bigger filters. I have put both 2nd and 3rd IF F-T filters in my radio and the improvement is fantastic. The skirts are steeper and the bandwidth is reduced. (You loose some HI-FI quality, but I gladly pay for that with improved filtering for contest racket.) F-T filters come as kits with instructions and the average ham can install them. There is one "problem" with this modification! It also reduces your bandwidth on transmit. You have to very carefully adjust your carrier oscilators so you don't have "shifted" audio on transmit. The best thing is to check your signal on another - wide IF receiver, with a particular microphone, for the most natural sounding voice. The signal is nice and narrow. This has created some problems for me in contests. The "regular" signal stations get close to me. I don't bother them, but they bother me, because of their wider signals! There is a way of using old 2.7 kHz filters on transmit and F-T 2.1 kHz filters on receive. You might deteriorate the input/outpu filter isolation and get some leakage around the filters. I haven't tried this yet.

On CW, some say that stock SSB filters (or F-T) are sufficient. But I have found that CW filters (Kenwood has 500 Hz or 250 Hz) make a big difference. I bought a 300 Hz Collins 455 kHz filter, which turned out to have less attenuation than SSB filters. With stock Kenwood filters or F-T filters I found they have about 6 to 8 dB more attenuation than SSB filters. So when you use them, the receiver loses a bit of sensitivity. (I checked two sets of each!) So the solution was to wire the the 3rd IF 455 kHz Collins filter in. The 2nd IF 8.83 kHz 250 Hz bandwidth F-T filter was connected in through a small relay controlled by a separate switch. When I need the gain I turn the 2nd IF filter off (most of the time). When the going gets tough and you need more selectivity on the crowded band, then I turn on the 2nd IF filter and the signals are separated. The bandpass curve with CW filters looks much better on CW than using only SSB filters. When you narrow the bandwidth with SSB filters, you get a triangular shaped curve; with CW filters you get something close to a rectangular shape. Switching from CW to SSB is a matter of flicking the mode switch. The selectivity controls can be left unchanged, as they are separate.

The PITCH control allows you to adjust the tone of the CW signal independently of transmit. What it really means is that you can set your selectivity at narrow, tune the signal for maximum S-meter reading, then tune the PITCH control for the tone you like. I prefer lower tones (around 300 Hz). Then when you tune the CW station for the same tone, you will be zero beat (almost) with him and not one kHz off as it is with many other radios.

The AF TUNE knob controls the pitch or frequency of the audio filter, which is turned on and off by the AF TUNE switch. It is a very effective tunable audio filter. The best way to tune all the above mentioned selectivity controls is to tune the receiver to the quiet portion of the band and turn the calibrator on. First set the selectivity to the minimum bandwidth you desire, tune VFO for maximum reading on the meter, tune PITCH for tone you like, then turn the AF TUNE on and tune the AF TUNE knob for the loudest audio at the required audio frequency. With all peaked for the maximum, then you can just control the CW VBT and use RIT to "chase" the signals.

The RF gain control regulates the RF gain of the receiver. In case of the presence of strong signals affecting the reception, it is better to use the RF ATT - attenuator; it improves the dynamic characteristics of the receiver. (I modified my Drakes so they had separate RF and IF gain control and I miss that on other radios.)

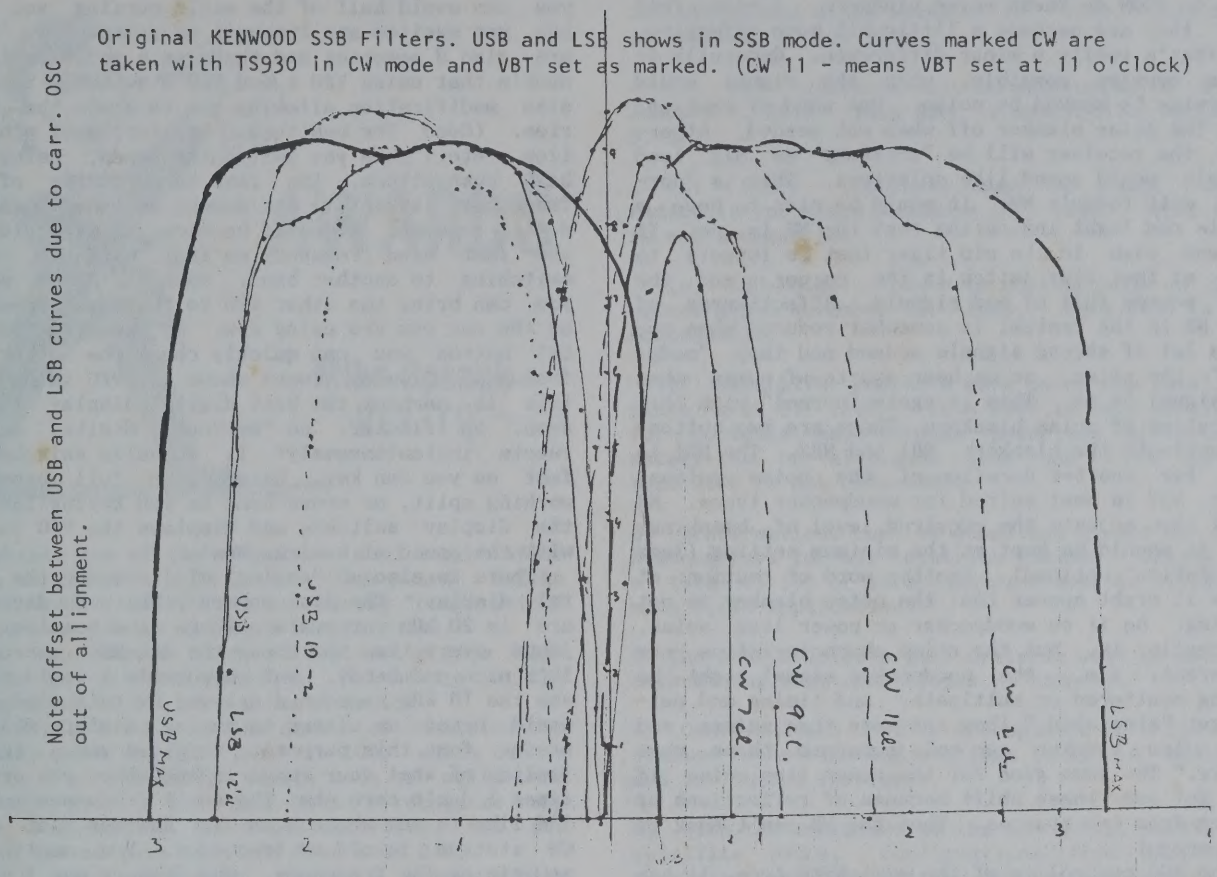
When all those features are not sufficient to suppress the QRM, there is yet another weapon - the NOTCH. It is a very effective IF type notch circuit and it has at least 40 dB attenuation. You can use it to null out the interfering carrier on SSB or CW. The red LED comes on just below the display when the notch is turned on. When you null-out the interfering signal, it doesn't affect the AGC and "closing" the receiver down as it does with an audio type of notch.

All those important knobs are grouped together in the lower right hand corner and the layout is well designed. The next knob, used most on CW, is the RIT knob. You can tell a good CW operator by where his signal is. Some people will call as far off as 2 to 3 kHz from your frequency. This is a problem, especially when you use narrow filters. You have to do a lot of tweaking around. The RIT has a range of plus/minus 9.99 kHz and it uses an optical encoder, so you can't wear it out! There are two more knobs: RIT and CLEAR. The RIT pushbutton turns the RIT on, and when you press the CLEAR it resets it to zero - no offset on receive. One more pushbutton I am really missing is the XIT - to activate this offset also on transmit. When you are "running" the stations on CW (or SSB) it is more convenient to use the RIT to tune them in. Say someone comes close to you and starts calling CQ. You would like to tune him with RIT, press the XIT button and tell him to QSY, then you would press the clear, and you are back on your frequency. You can't do it as it is. You have to engage the VFO or put in the memory and make the excursion. I prefer to use RIT for offset tuning and would really love the XIT button. (ICOM has it.) The RIT offset is also shown on the display as a two digit number with + or - sign and also the main frequency readout changes accordingly. When the RIT is turned on, also the little "RIT" lights up above the two digit display.

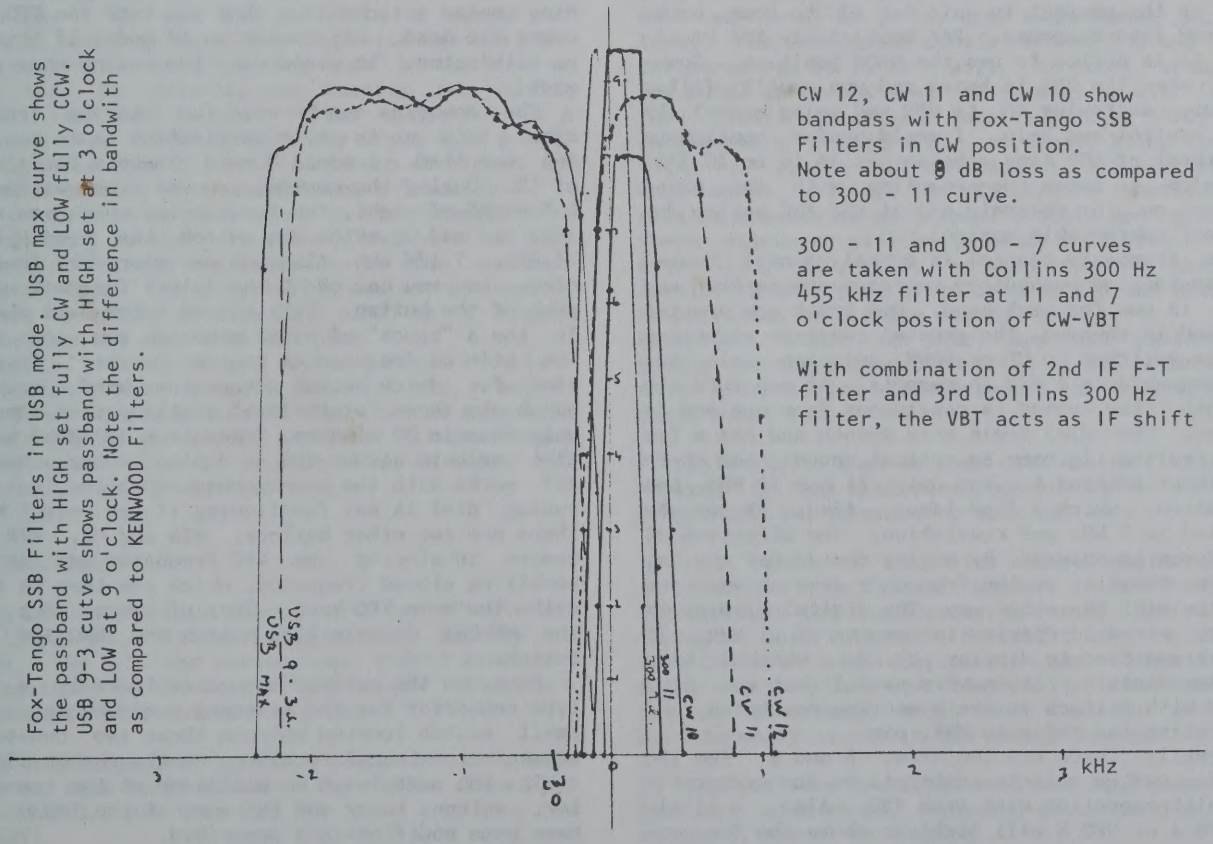
Another important feature is the NOISE BLANKER. 930's noise blanker does the job. It belongs in the category second generation noise blankers. It takes out the woodpecker and it takes out the power line noise in addition to other "regular" types of noise like ignition, etc. One thing is noticeable though, you can hear the "holes" when it is blan-

Original KENWOOD SSB Filters. USB and LSB shows in SSB mode. Curves marked CW are taken with TS930 in CW mode and VBT set as marked. (CW 11 - means VBT set at 11 o'clock)

Note offset between USB and LSB curves due to carr. OSC out of allignment.



Fox-Tango SSB Filters in USB mode. USB max curve shows the passband with HIGH set fully CW and LOW fully CCW. USB 9-3 cutve shows passband with HIGH set at 3 o'clock and LOW at 9 o'clock. Note the difference in bandwith as compared to KENWOOD Filters.



CW 12, CW 11 and CW 10 show bandpass with Fox-Tango SSB Filters in CW position. Note about 8 dB loss as compared to 300 - 11 curve.

300 - 11 and 300 - 7 curves are taken with Collins 300 Hz 455 kHz filter at 11 and 7 o'clock position of CW-VBT

With combination of 2nd IF F-T filter and 3rd Collins 300 Hz filter, the VBT acts as IF shift

king. Sounds like tiny clicking. I haven't noticed this on ICOM or Yaesu noise blankers. I also feel that they are perhaps a little bit more effective, but that's really a minor difference. Generally it makes copying possible, when the signal would otherwise be masked by noise. One word of caution: keep the noise blanker off when not needed, otherwise the receiver will be "scratchy" as all loud signals would sound like splatters. This is "normal" with today's NB. It would be nice to have a little red light indicating that the NB is on. It happens even to the old tiger that he forgets to look at that tiny switch in the corner, and the band sounds full of bad signals. Effectivness of the NB in the contest is somewhat reduced when you get a lot of strong signals around and they "modulate" the noise, so we hear spurts of noise when the signal is on. This is again "normal" with this generation of noise blankers. There are two buttons to activate the blanker: NB1 and NB2. The NB1 is used for shorter duration of the noise pulses, while NB2 is best suited for woodpecker types. NB level then adjusts the required level of blanking, and it should be kept at the minimum setting (less "modulation" noticed). Another word of caution: at times it might appear that the noise blanker is not working, be it on woodpecker or power line noise. It really is, but the noise characteristics are different, i.e., the woodpecker signal might be coming scattered or multipath, and timing and pulses get "stretched," they are more than pulses and the noise blanker can only suppress those more "spiky." The same goes for the power line noise if you get some phase shift because of reflections or coming from two sources. Then the NB can't hack it 100 percent.

The AGC control is of the switching type. It has three positions: OFF, FAST and SLOW. I use fast most of the time, especially on CW. You don't have time in the contest to wait for AGC to come back. You need fast response. For comfortable SSB reception it is better to use the SLOW position. Sometimes when the QRM is heavy and you cant't filter it out, switching AGC to OFF and using manual RF gain control can help. I would prefer continuous adjustment of AGC time constant as it is on IC 740; it helps to tweak the reception with the noise blanker on, or generaly adjust the AGC action for the most comfortable control.

The frequency control is a real honey! Conveniently located pushbutton switches are marked and there is one for each band. One touch and presto! The band is changed. The general coverage reception can be switched by UP or DOWN switches selecting band segments in 1 MHz increments. If you turn the VFO knob, the tuning is continuous from one end to another. The dial feels very smooth and has a fly wheel feeling. It uses an optical encoder and there is almost nothing to wear out. It has 10 kHz per revolution, which I find ideal. Also, it can be modified to 5 kHz per revolution. The direction of tuning can be changed. By moving one jumper inside, you can change it so the frequency goes up when you turn the dial the other way. The digital display is factory wired to display increments of .1 kHz. It can be modified to display .01 kHz, which I have done immediately. It is very useful when you play around with filters or are measuring something, or calibrating the radio to WWV, etc.

Normally there are two VFOs, A and B. The VFO function switch selects combinations for transceive and split operation with each VFO. Also, a little red VFO A or VFO B will light up above the frequency display. It is good to get used to watch it so you can avoid half of the world cursing you when you get excited and transmit on wrong VFO. There are also 8 memories and there is a modification to double that using VFO A and VFO B switch. There is also modification allowing you to scan the memories. (Good for unattended monitoring of propagation, etc.) When you switch the bands, using the BAND pushbuttons, the last three digits of VFO frequency is kept in the memory and the megahertz digits change. It would be nicer if we could keep the last used frequency on that band in, after switching to another band. With the "A=B" switch you can bring the other VFO to the same frequency as the one you are using now. By pressing the TF-SET button you can quickly check the other VFO frequency. Display always shows the VFO in use. And this is perhaps the best digital display I have seen. No flicker, no "nervous" digits, and it reacts instantaneously! It actually switches as fast as you can key. Using it in full break-in, working split, or cross-band as you keying the rig, the display switches and displays the VFO in use with the speed of keying. Wow!

There is also an "analog" dial, under the digital display. The dial covers 1 MHz and divisions are in 20 kHz intervals. There is a pointer that jumps every time you cross the 20 kHz increment. It's nice and handy, but personally I would rather see the 10 kHz segment displayed by this dial. This would bring me closer to analog dials, which I prefer for this purpose. It gives you a spacial feeling of what your range is and where you are. At times I don't care what the exact frequency is, but I'd like to see where I am, or how far that other CW station is off my frequency. You can't keep memorizing the frequency, and this is why I prefer to use RIT rather than both VFOs when running the stations on my own frequency. There is some clicking noise noticeable, when you tune the VFO across the band, especially in AM mode. If this can be eliminated, it would make the tuning more pleasant.

The memories can be used for storing frequencies. It's up to one's imagination as to how you can use them. I added 8 more channels for a total of 16. During the contest you can store within the B "bunch" of eight, the frequencies where you would like to end up after you switch the band, i.e., 14.175, 7.178 etc. Also you can store WWV frequencies, so you can check the latest forecast with a push of the button. This allows quick band change. In the A "bunch" of eight memories you can store the pile-up frequencies or some "marker" frequencies for quick switch across the band. You can punch in those "mysterious" stations that identify only once in 30 minutes. There is a VFO/MEMO button that selects either VFO or dialed memory channel. RIT works with the memory channel while the main tuning dial is not functioning if you select MEMO. There are two other buttons, MIN and MR, MIN for memory in-storing the VFO frequency and MR for recalling stored frequency, which can then be tuned with the main VFO knob. They of course work with the MEMORY CH selection switch and FUNCTION A B switch.

Next to the antenna connector there is a RCA-type connector for the external receiver antenna. A small switch located between those two connectors can select external receiver, or the one in 930S.

In the next issue we will look at the transmitter, antenna tuner and the rest of the TS930S and have some modifications described. (VE3BMV)

AWARDS

Mike Spenuk
VE3JTQ

Probably one of the oldest and most sought after awards is the ARRL's DX Century Club Award. Unlike many awards, the DXCC is an ongoing "competition" with no time limits and very simple rules.

The total number of countries varies from time to time due to world politics, but hovers in the neighborbood of 300 plus a dozen or so.

The first level, or the number of countries to initially join the DXC Club, is 100, which can be made on a single band, single mode or multi-band and multi-mode. The ARRL doesn't recognize any single bands except 160 m and satellite, but you can get around this with the Five Band DXCC.

As I said previously, it is a never ending contest. Many stop at the 100 country level, while others continue on, trying to work "all" the countries. It can be done, in a manner of speaking, and many have done it, although the ARRL keeps everyone, even the "Big Guns" at the top, on their toes by deleting one country and adding another from time to time. This is not done in a haphazard way, although some may argue this point. A "countries list criteria" has been developed to determine exactly what constitutes a "country."

There is also no time limit on the competition, although many consider it quite a challenge to work as many countries as possible in the shortest amount of time. On a worldwide contest weekend it is very possible to work DXCC (100) on a single band or even on more than one band.

Finally, before we get to the rules, this is a competition that doesn't require big, multi-kilodollar, super stations. DXCC can be made with simple antennas and modest stations; it just might take longer. This is a competition in which you set your own goals and time limits.

ARRL DXCC RULES

1) The DX Century Club Award, with certificate and DXCC lapel pin, is available to ARRL members in Canada, the U.S. and possessions, Puerto Rico, and all amateurs in the rest of the world. There are six separate DXCC awards available:

(a) MIXED (general-type): contacts may be made using any mode since November 15, 1945. This DXCC is endorsable; see Rule 5.

(b) PHONE: contacts must be made using radiotelephone since November 15, 1945. This DXCC is endorsable; see Rule 5.

(c) CW: contacts must be made using CW since January 1, 1975. This DXCC is endorsable; see Rule 5.

(d) RTTY: contacts must be made using radioteletype since November 15, 1945. This DXCC is not endorsable.

(e) 160-Meter: contacts must be made on 160-meters since November 15, 1945. This DXCC is not endorseable.

(f) SATELLITE: contacts made using the satellite since March 1, 1965. This DXCC is only available for contacts made through polar-sun synchronous satellites of altitudes less than 1,500 miles. This DXCC is not endorsable.

2) Confirmations must be submitted direct to ARRL Headquarters for all countries claimed. Claims for a total of 100 or more countries must be included with first application.

3) The ARRL Countries List criteria will be used in determining what constitutes a "country."

4) Confirmations must be accompanied by a list of claimed countries and stations to aid in checking and for future reference.

5) With the exception of the 160-Meter, RTTY and Satellite DXCCs, confirmations from additional countries may be submitted for further credits as follows: for accredited totals between 100 and 250, in increments of 25 that will, at least, bring the new total up to the next endorsement sticker level; for accredited totals between 250 and 300, in increments of 10 that will, at least, bring the new total up to the next endorsement sticker level; for total accredited countries over 300, in increments of 5 that will, at least, bring the new total up to the next endorsement sticker level. Endorsement stickers for affixing to certificates will be awarded as additional credits are granted. These stickers will be in exact multiples of 25, i.e., 125, 150, 175, between the 100 and 250 levels; in multiples of 10 between 250 and 300; and in multiples of 5 above the 300 levels.
Exception. Once per year, any DXCC participant having an accredited DXCC total of 250 or more may make a submission without regard to the number of cards submitted.

6) All contacts must be made with amateur stations working in the authorized amateur bands or with other stations licensed to work amateurs.

7) In cases of countries where amateurs are licensed in the normal manner, credit may be claimed only for stations using regular government-assigned call letters. No credit may be claimed for contacts with stations in any countries in which amateurs have been temporarily closed down by special government edict where amateur licenses were formerly issued in the normal manner.

8) All stations contacted must be "land stations." Contacts with ships, anchored or otherwise, and aircraft, cannot be counted.

9) All stations must be contacted from the same DXCC "country."

10) Contacts may be made over any period of years since November 15, 1945, for the Mixed, Phone, 160-Meter and RTTY DXCCs; January 1, 1975, for the CW DXCC; and from March 1, 1965, for the Satellite DXCC, provided only that all contacts be made under the provisions of Rule 9, and by the same station licensee. Contacts may have been under different call letters in the same area (or country) if the licensee for all was the same. (You may feed one DXCC from several calls held simultaneously.)

11) Any altered or forged confirmations submitted for DXCC credit may result in disqualification of the applicant. The eligibility of any DXCC applicant who was ever barred from DXCC to reapply, and the conditions for such application, shall be determined by the Awards Committee. Any holder of the Century Club Award submitting forged or altered confirmations must forfeit his right to continued DXCC participation.

12) Operating Ethics:

(a) Fair play and good sportsmanship in operating are required of all DX Century Club members. In the event of specific objections relative to continued poor operating ethics, an individual may be disqualified from the DXCC by action of the ARRL Awards Committee.

(b) Credit for contacts with individuals who have displayed continued poor operating ethics may be disallowed by action of the ARRL Awards Committee.

(c) For (a) and (b) above "operating" includes confirmation procedures.

13) ARRL MEMBERSHIP IS REQUIRED of all DXCC applicants in Canada, the U.S. and possessions, and Puerto Rico. All new DXCC applications must contain sufficient funds for safe return postage in the form of U.S. currency, check or money order. For DXCC endorsements and completions of new applications, sufficient funds for safe return postage are also required. A chart showing suggested sums for return postage is available on request from ARRL Headquarters.

14) ARRL MEMBERSHIP IS NOT REQUIRED of foreign applicants. Each new DXCC application must contain sufficient funds for safe return postage. For DXCC endorsements and completions of new applications, sufficient funds for safe return postage are also required. A chart showing suggested sums for return postage is available on request from ARRL Headquarters.

15) Decisions of the ARRL Awards Committee regarding interpretation of the rules here printed or later amended shall be final.

16) Address all applications to ARRL, DXCC, 225 Main Street, Newington, CT, U.S.A. 06111.

The preceding rules are from the ARRL DXCC LIST. For information on country list criteria, current countries that are acceptable for the award, or deleted countries, write directly to the ARRL. The address is given in rule 16.

TECH NEWS

Mike Spenuk, VE3JTQ

Yuri talked me into taking this column two days before this month's material deadline. I managed to pick up bits and pieces of material that I think may interest you. At least, I hope it does.

I'm not quite sure what format I will use in the coming months, but this month it's just "bits and pieces." I think for next month I will concentrate on one topic and present a sort of encapsulated summary of the material.

What do you want? I would appreciate any comments you might have. New methods, products and technologies are created almost continuously. I am counting on you to help by sending me notes, news releases, or any other information that may help to keep this column up-to-date.

5th Generation Computers

In 1980, researchers at Tokyo's Institute for New Generation Computer Technology decided that by 1990 they could produce a computer that could make its own decisions. Today's fourth generation computers are one step back from this. They can process vast amounts of information, but have no idea of what the information actually means.

If you think developing a thinking machine is not that difficult, think about all the steps you take to make one contact in a contest. The transmitting part is easy. Your simple desk top computer (micro) can easily do that as well as keep track of the contacts, score, operating time... But receiving is the killer.

Keeping with this example for a moment, what happens to your computer when a guy calls slightly off frequency? No contact. What happens if he signs his call differently than what you've programmed for? No contact. You see, there is a lot to consider in designing the ultimate thinking machine; even for this "simple" example.

So far the Japanese Ministry of International Trade and Industry has invested close to $34 million into this project. The research and development phase of the project will end in early 1985, but there is still a long way to go in the project.

For the complete story on fifth generation computers see "Electronic Week," December 3, 1984, pp 57-63.

Would you believe a relay in a SIP?

Crydom Inc. of California has what they call a "ChipSwitch." It is a solid-state relay capable of handling 3A at 240V AC and is packaged in a single in-line package.

The "ChipSwitch" uses solid-state switch with zero cross technology (SSSX) to replace descrete components and hybrid circuit solid-state relays.

What can you buy for under $300?

How about a 1200 baud, intelligent modem. The "Volksmodem 12" from Anchor Automation Inc. of

California is a 300, 1200 baud intelligent modem with autodial/autoanswer capabilities. It requires the RS-232-C interface for use in terminals and computers. The "Volksmodem 12" is compatible with the Bell 103/212A standard. It is capable of full/half duplex operation, tone and pulse dialing and busy-signal detection.

I was considering holding off on a modem until the 2400 baud standard became more popular, but prices on 1200 baud modems are starting to become appealing. This "Volksmodem 12" is no exception.

Speaking of 2400 baud modems, modems from NEC America Inc., U.S. Robotics Inc. and Hayes Microcomputer Products Inc. are scheduled to hit the market this month. Not only do these modems conform to the CCITT V.22 bis standard, they are also usable with the Bell 103 and 212A standards.

The modems are intelligent and perform varying, interesting functions. The U.S. Robotics modem is even capable of timing calls. Something that you may not really want to know if you are on long distance!

Tired of getting "no room" messages whenever you try to save a file to disk? How's this for storage? Miniscribe Corp. of Longmont, Colo. is working on an 85.3 Megabyte (unformated capacity), five-and-a-quarter inch, full-height hard-disk drive.

Actually this is just one in a family (6000 series) of four drives the company is working on. The other three have unformated capacities of 32, 53.3 and 74.7 megabytes. The target markets for the drives are supermicro computers, minicomputers and multi-user business systems.

The drives all support the ST412 interface standard. They should be available soon.

New storage system

You can't afford a floppy disk system for your computer and are tired of waiting around for audio tape storage/retrevial? Now you can have the best of both worlds: fairly fast, accurate storage and low cost.

Entrepo Inc. of Sunnyvale, California has re-introduced their "Microwafer." It was originally introduced two years ago, but was withdrawn from the market due to manufacturing problems. The manufacturing difficulties have been ironed out, and the device is actually better than the original design.

The storage system is based on Entrepo's patented, endless loop, miniature cartridge and drive unit with associated control circuits. The cartridges are capable of storing, in an unformatted form, more than 300 kilobytes and are about half the size of a standard audio cassette, although more expensive.

The "Microwafer" can load a 10-page document in about 6 seconds (about 50 times faster than tapes) and has a soft-error probability of 1 in 100 million (floppy's soft-error probability is about 1 in 1,000 million).

Predicted sales will come from electronic typewriters, intelligent terminals, printers, electronic cash registers, and telecommunications gear such as PBX switches.

Entrepo Inc. has recently introduced the Quick Cassette Microwafer storage system for use with the Commodore 64 and VIC-20.

Single chip 2GHz frequency synthesizer

From Plessey Solid State in California comes the SP5050, a single-chip (18 pin dip) whicn contains a differential amplifier preamp, a divide-by-32, 2 GHz prescaler and a 14 bit programmable divider controlled by a serially loaded data register.

The device, designed for use in satellite, television or cable television receivers, is capable of frequency sysnthesis from 64 to 2,048 MHz with typical power supply demands of 5.5 volts at 70 to 90 mA. It features single-port 16 bit serial data entry, a 125 MHz clock, and a charge-pump amplifier with feedback and disable functions.

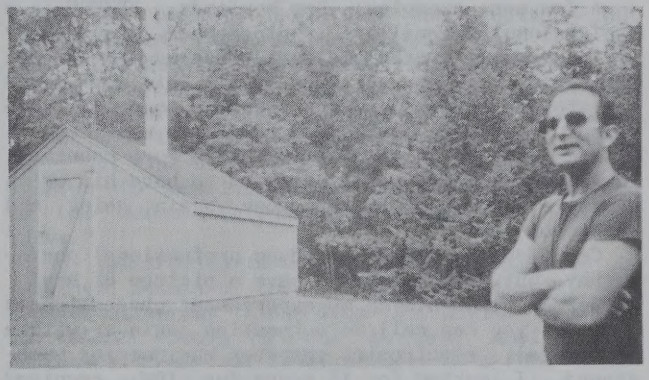
Interested in microwave work?

Hughes Aircraft Co., Microwave Products Division has a series of oscillators (4727xH) that operate in the V, E and W bands (50 to 96 GHz).

The varactor-tuned millimeter wave Gunn Oscillators offer power output to 50 mW and voltage tuning ranges up to 3 GHz for a wide variety of receiver and local-oscillator designs.

Varactor tuning voltage is typically +4 to -25 volts with sensitivity from 100 to 800 MHz/volt. Modulation rate 0 to 80 MHz.

These devices will be something to look forward to in the coming years. Why? Well, if you just have to have one now, prices start at $7,000!



Woody, K2UU, tells how Arnold, W2HCW, beat the neighbours' action of forcing Arnold to take down his towers. The local law states: if the tower is a part of a house, than it's OK. So...

Arnold built the "houses" around his towers.

Chuck, KØRF (left) and George, WØUA are getting ready for ARRL SS. KØRF holds 40m US record in CQWW

HOBBY, JOB OR BURNOUT ?

Yuri Blanarovich, VE3BMV

Is it coincidence that throughout this issue we have few mentions of people loosing interest and pleasure in doing something? This is an interesting subject and it is very much related to our work, hobby and various aspects of it.

We were just sitting around and talking about the photography. Tony VE3IAT, ZL1AZV, etc., Richard, VE3FAC and myself. We talked about photography, cameras, techniques, etc. We found that the we had most fun when we were aspiring amateurs, using lousy cameras, in the process of learning. You can reach the "pro" stage, get all the super equipment, do wonderfull pictures for magazines, and all of a sudden you realize that you haven't taken a picture of your family for few years. What happened?

Well, I think it goes back to basic human nature (that's what separates homo sapiens from animals and robots), the desire to learn, to explore, to get better and to see that one's efforts are appreciated. We like to compare our doings with others and we like a little competition. (There is another option: sit in front of the TV with a beer bottle in hand.)

A few more examples: Don Newlands, VE3HGN is a professional journalist, photographer, broadcaster and a music critic who has traveled the whole world. One day he got tired of all this and moved out to the country, where there is no power line noise, fell in love with ham radio and went bananas DXing. Now he is waiting for his 3 more countries to show up. We are really honored to have him write "Just a thought." It gets your brain going and makes you think.

Carl Henson, WB4ZNH has done professional photography, but we still don't have a picture of him!

Let me elaborate on my experience: professionaly I guess you can call me automation engineer with a mechanical, electronic, computer engineering background. I worked for 13 years for IBM, received the highest IBM Award - The Outstanding Contribution Award. I am fascinated with automatic machines, but turned off by dull people who use (or misuse) the machines. I'm not sure which way I will go in the future. There is still a lot to be done and discovered in the area of automation. In the ham radio arena, I went through the SWL stage, had 280 countries confirmed, worked one DXCC (270) at OK3KAG, another one with my own OK3BU, yet another one with VE3BMV plus 5BDXCC, got 160m WAS and 200 or more other awards, worked over 350.000 QSOs. I can't bring myself to work DXCC CW from scratch again, or chase awards. (This is why there was an opposition to start DXCC from scratch again!) Once you have done something, what is the point of doing it again?

My main interest right now is still contesting. Each contest is a new thing. There are new goals to be achieved, records to be beaten, competition to be challenged. This is still going strong with me and it's now my 26th year. Antenna design and propagation mystery is still a great challenge and there is a lot to be done in that area. If someone says something is impossible it attracts my attention. I'd like to do things like that.

The latest thing with me is RADIOSPORTING. I see it as a great challenge. If nothing else, at least I will be forced to learn touch typing and improve my english (I never took english at school, I learned it from 20 meters and ham radio magazines and the dictionary). I want to make a terrific magazine. Why? Why not! Are you tired of other things? Why don't you join us!

What does this have to do with you? We want to bring this to your attention so that perhaps you will include ham radio and RADIOSPORTING among your enjoyable activities.

Many people who got involved in the ham radio business and became communications professionals lost interest in ham radio. You don't want to come home to your favorite hobby, only to find that it is the same thing you just left at work. You need a change!

I went through most of the stages of ham radio from SWL to contesting, designed and built my equipment and got burned by HF and VHF. This is one wonderful aspect of amateur radio - it is diversified and has so many areas, and is growing all the time. To go through each aspect of it, you can go a long way.

We have seen people getting into it quickly, putting up a multi-multi station, grabbing top place and in a flash exploding away, you don't hear them anymore.

Some young operators get to operate "biggie" in the multi category and then they get home to their vertical and barefoot radio and they can't turn it on any more. It's inferior.

I think to get most out of the hobby, you should try to do it gradually. Don't be affraid of learning, be it CW or electronics. It can help, especially if you are young, in your career. We have all had the most fabulous time with inverted Vees and barefoot rigs. We stayed up nights, chased the DX and we couldn't wait for that precious QSL card. It was and is the unknown and mysterious that attracts us. Propagation plays games with us, and it is this big unknown that attracts us. I think the sattelite to many is like a repeater in the sky (the last OSCAR). It's great for people with apartment antennas. I think many had more fun when the sucker was just flying by us in 20 or so minutes.

Many, after they reach their "Honor Roll," become inactive. You don't hear them unless a brand new country shows up.

VE3HGN's beef is that most of the hams work for the "weather bureau," everybody talks about the weather. Do we really care? Isn't it just to plug the hole in the conversation? Why don't we ask what you do? Quite often we "pass" a person on the air who has similar interests to our own, but we simply won't know, because we just exchanged a weather report. This is why we like to publish your letters and pictures here, so that next time we hear you, we will know what you are up to, and can have a nice long QSO about our common interests.

So this is my tip, especially for younger operators:

Do it slowly, learn, go gradually from a piece of equipment bought at the flea market; modify it, play with it.

Do your "own" operating, forget the lists. It's like shooting animals in the ZOO. Do your own search; it's fun and satisfying.

Go after awards, countries or whatever you like and enjoy most. Even if ARRL "official thinking" is that DXCC is not a competition, believe me, it is. You chase countries, you flash your totals around, you compete for that magic number.

If you like to get really competitive, go for contesting. It is different. You can start at the low end, in the QRP category, or single band. You can compete with your friend next door, you can aim at beating country or world records, or just simply give out contacts and multipliers to others. Serious ontesters usually find that DXCC doesn't turn them on anymore. (What's the big deal if over the weekend you can work up to 150 countries on a single band?) They get to the stage where antennas and operating are the things that occupy them most.

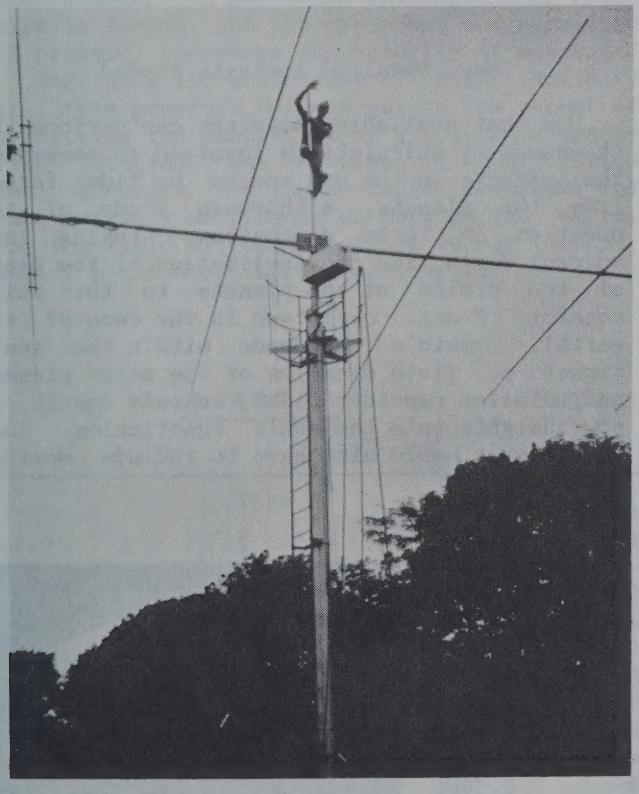
Don't overlook the technology. True, radios are getting more complicated and it is hard to beat the commercial gear in price/performance ratio. But you can either modify an old clunker or even improve that latest marvel, so it is still better and gives you more pleasure in operating it.

Another area is in the use of computers. A whole new world is waiting there. The computing power available for peanuts is awesome. We have the technology here to completely automate a station on RTTY or CW.

Those who last longest in amateur radio are usually the ones that did it the hard way, from scratch and on their own. They enjoy it more and longer. It is not a flash in the pan for them.

So think about it and try to adjust the pace for your own enjoyment. Maybe it will help to prolong it and make it an eternal hobby.

Don't we do this all because we are just big kids, and we get fed up with toys after a while?



Woody, K2UU atop of his "retracted" 6 el. 20 m beam

PROPAGATION

We knew for quite a while (even before the days of radio), that the Sun has cycles of duration approximately 11 years. Some are stronger than others. So far the best one peaked around 1958-59 and boy, do I remeber it! Just starting and operating from OK3KGH, using 10 W AM Wehrmacht surplus tank radio, I was working the whole world, 24 hours a day on the 10 meter band. The following two peaks were also excellent. What is the major factor contributing to those cycles? We have two articles in this issue that elaborate on the effect of Jupiter and other planets on the Sun and correlation with occurrence of sunspots.

In the upcoming issues I would like to start discussing the "conductive" propagation theory. I would like to get going some discussion and exchange of ideas and experiences. After my initial article published in CQ magazine (June, 1980), I have received a number of letters. It is almost amusing to read the arguments. Some say that this is outright nonsense, and most critics are emotional, overlooking important points. Some say this is nothing new (they had better get "synchronized"). My humble opinion is that they get rather emotional about the fact that "some ham" is trying to "overthrow" something that they learned at school from books, instead of taking critical stand and trying to examine the idea that "maybe she's not flat after all." All I can say is that I started to question the reflections when I started to use decent antennas and things just didn't "jive."

In forthcoming issues I will elaborate more on numerous points of the "conductive" theory, and look at different things from that angle. Now when the higher bands are not so hot, most people concentrate on the lower bands - 40 m and down. With multi-element rotary beams becoming more common, the ranges increase. Good directional antennas on both ends can lend some interesting possibilities for investigation of various propagation modes, especially the Grey Line, Skewed Path, Long Path, etc. If you are experiencing some unusual propagation conditions, please let us know the details. We can relate them to our KH6BZF Propagation Report and study the connection. This will allow us to make some predictions of openings for typical situations. Also, information on your antenna system and location would help to put things into perspective.

Another question that was bothering me for quite a long time is the effect of the altitude on signal levels. How about some comparisons done, let's say, on the east coast between the stations by the ocean, "regular" location in-land ones, and another one way up in the mountains? They should have comparable stations and antennas. The 80 and 160 m results will be especially interesting while working Europe and some long path stuff. Does anyone have any experience, amateur or commercial, in that area? We know that when we hear some aeronautical mobile stations, they are usually louder than stations coming through from the area the AM is flying over. Let's hear from you! (VE3BMV)

Planetary Influence on Sunspots

Chuck Clark, K4ZN

Abstract.

Tides on the sun caused by gravitational attraction of the planets would seem to have a significant part in causing sunspots. As a corollary, it is also suggested that the same forces would account for the sun's greater angular velocity of rotation at the equator than at higher latitudes.

At five billion or so years of age, the sun, a gaseous body, should by now be fairly homogeneous, except for a somewhat greater concentration of heavier nuclei nearer the core, and except for the nuclear reactions occurring deep down where temperatures and pressures are high enough. Large scale disturbances such as sunspots and flares would therefore seem to require something outside the sun itself to trigger them.

The fact that the sunspot cycle's length quite closely approximates the orbital period of Jupiter, the most massive planet, over 2.5 times as massive as all the others put together, would seem to suggest that there is some connection. Let's see how Jupiter's orbit and the sunspot cycle match up. (Chart 1.)

It appears that Jupiter has a negative influence on spot formation: when Jupiter is closest to the sun and hence its tidal effects are greatest, sunspots are near minimum. This "Jupiter effect" is more credible, as the sun's diameter is 109 times earth's.

Jupiter's Negative Influence

Tabulated below are some data on the planets that relate to tidal effects on the sun. The values in the last column, m/r^3, are an indication of the tidal effect of each planet. The tide raised by gravitational pull is proportional to the mass of the distance. Thus it can be seen that the most significant effects are produced by Mercury, Venus, Earth and Jupiter. The orbits of Venus and Earth are nearly circular, and so their effect does not vary greatly between perihelion and aphelion, but the orbits of Mercury and Jupiter are more eccentric, and m/r^3 may lie anywhere between 0.4693 and 1.6401 for Mercury, and 1.9479 and 2.6048 for Jupiter.

Jupiter's influence is thus the greatest of all the planets when it is at perihelion, but not by a large amount, and at Jupiter's aphelion drops to second place, less than that of Venus. There are several possible explanations of why Jupiter has this negative influence on sunspot generation. Is it because Jupiter's larger value of m/r overrides the tidal forces of the other planets? Or is it perhaps because the tides propagate around the solar equator at differing velocities because of the different velocities of the planets in orbit (Mercury completes an orbit in 88 days, a bit more than three rotations of the sun on its axis, while Jupiter takes 4335 days, 150 rotations, to make the circuit)? There may also be resonance effects at work, which could explain why spots appear at different latitudes at different times during the cycle. In short, how the tidal forces are responsible for the spots is still anybody's guess, but the correspondence between Jupiter's orbit and the sunspot cycle does seem to indicate some connection.

More Detailed Analysis Needed

Now that available computers can perform the thousands of calculations involved in assessing the effects on the sun caused by tidal forces from the planets, a thorough study of the question in three dimensions, taking into account facts like the inclination of the plane of the orbits of the planets to the solar equator (7 deg. by 15 sec in the case of the earth), possible resonance within the sun's structure, fluid dynamics of the solar plasma, and similar considerations, should result in new insights into the sun's functioning. Such an analysis would also have to include conside-

Planet	Mass	Eccentricity of orbit	Distance from sun	Inclination of orbit	Tidal effect
Mercury	0.0543	.2056	.3871	7deg 00sec	0.9361
Venus	0.8136	.0068	.7233	3 24	2.1501
Earth/Moon	1.0123	.0167	1.0000	0 00	1.0123
Mars	0.108	.0934	1.5237	1 51	0.0305
Jupiter	318.35	.0484	5.2028	1 18	2.2614
Saturn	95.3	.0557	9.5388	2 29	0.1088
Uranus	14.54	.0472	19.1820	0 46	0.0021
Neptune	17.2	.0086	30.0577	1 46	0.0006
Pluto	0.05	.2486	39.5178	17 08	---

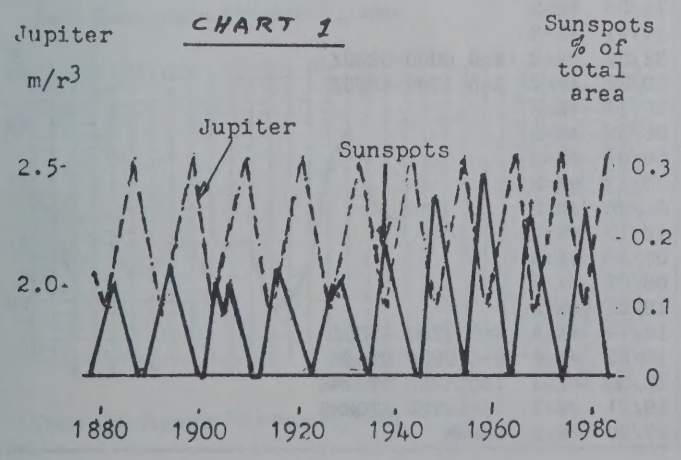
ration of the effect of the revolution of the sun itself around the center of mass of the solar system, which is sometimes close to the center of the sun itself, sometimes almost a million miles away.

Afterthoughts

If such a thorough analysis should prove helpful in explaining what happens on the sun and in predicting future disturbances, it might also be applied on earth toward obtaining a fuller understanding of global atmospheric winds and ocean currents, thereby providing meteorologists with another tool to help in their work of forecasting.

Secondly, such an analysis could lead to an explanation of why the sun's equator rotates faster than the poles. Perhaps it is due to the inclination of the orbits of the planets to the solar equator. Gravitational pull on matter near the equator by a planet above or below the plane of the equator will tend to pull the matter toward the plane of the attracting planet. Because the matter is in motion around the center of the sun, however, it does not yield in that direction, but tends instead to process as a gyroscope. Restraints imposed by other parts of the sun not as subject to the force oppose the precession, however, and as a result a reactive force opposes the planet's gravitation. And so work is done in altering the direction of motion of the sun's matter, work that serves to increase the velocity along the equator. A gyroscope whose plane of rotation is turned, and the gyroscope not permitted to precess, increases its velocity of rotation.

How detailed a forecast of solar activity will this provide? Perhaps not to the extent of predicting the occurrence of a spot at a specified location, but at least it should allow more accurate and longer-range forecasts of such activity as affects us here on the earth, in the field of communications in particular. And it might even improve weather forecasting.



OREGON TEAM STATION STUDIES PROPAGATION

Mary and I (KA7FEF/KA7FEE) are a team station. Very briefly, I am an ex-WWII radio op with an "If someone made it: I can fix it" mentality. Mary has an FB background in astronomy, particularly in solar and lunar activity and magnetic phenomena. Our stations are modest: Novice power, dipoles, verticals and for myself, QRP mobile. So you can see, from the beginning we looked for any propagation aids which would help us.

John Nelson, a long-time RCA forecasting enginer (recently deceased, May '84) had worked out an effective propogation method, utilizing heliocentric (sun-centered) aspects.

Later in 1980, we learned of his work and the book he wrote for amateurs - The Propagation Wizards Handbook. John Nelson was with RCA for 45 years as a radio op and forecasting engineer (propagation analyst).

In 1961, he delivered a research paper on his developing solar theories at the University of Naples for a group of NATO scientists, sponsored by NASA, where many of his forecasting successes took place.

The details of his work are better dealt with by an SASE to this station or your own study, but briefly, the main outlines are:

"He learned that sunspots were not entirely random; that there was a relationship, especially between the positions of the six inner planets in our solar system and sunspots. The worst radio storms took place, he found, when Jupiter and Saturn were 90 degrees to each other, or in a straight line (180 degrees) with the sun and, in addition, when Mars, Venus, Mercury and the Earth, itself, were in similar configurations." (Recall your Novice days, when you learned about magnetic flux relationships between inductive bodies.)

We spent a year testing his heliocentric method of analyzing planetary relationships as they apply to radio quality.

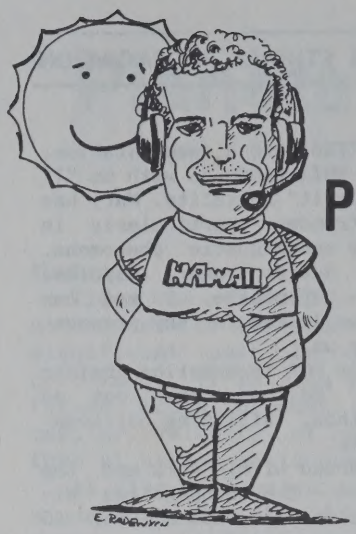
In correspondence with Nelson, he confirmed our suspicions that his propagation column in 73 was abbreviated and that his private consultative service uses more aspects for a more exact forecast.

The point of this note is to show how much, as individual amateurs, we can contribute to John Nelson's work. Like all of you, we have developed an international correspondence with many amateurs. The real test of any new idea is to try it out.

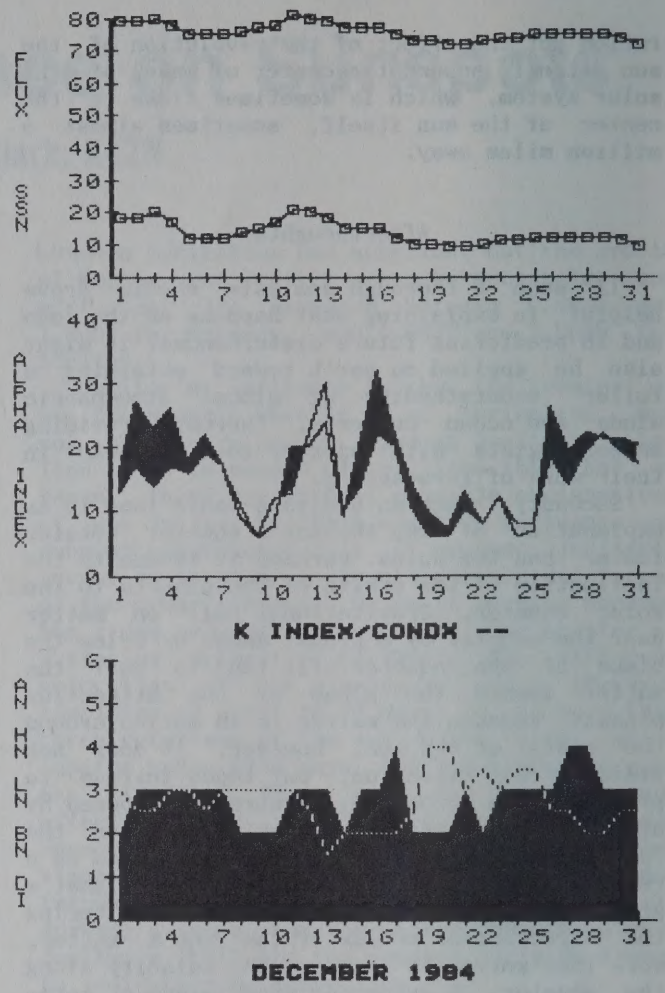
With the help of Luiz Augusto Rodrigues da Cruz, PY7AHJ, in Recife and other Brazilian amateurs, we set up a program we followed for about one-and-a-half years (September '82 to January '84) to try forecasting for conditions in Brazil, 6,000 miles away. Our efforts originally were only 60 percent accurate, but with the addition of some geocentric and lunar aspects, the predictions rose into the 80's.

OM Cruz sent QST's on 40 and 2 meters with the forecasts; it was also referred to in the print media. For our purposes (Brazilians and Oregonians), it was worth-while. We gained insights into propagation conditions at our widely different locations, learned some of the fundamental problems involved and advanced the cause of international understanding....with no tools but paper, pencil, a table or two and some ear scratching. We encourage you to try!

(Worldradio, John Mackenzie, KA7FEE)



KH6BZF PROPAGATION REPORT



Statistical information is compiled by KH6BZF and processed on a computer by VE3BMV.

The first diagram shows the value of solar flux (top curve) and SSN - sunspot number (bottom curve). The X axis and scale is the same for both. The Y - axis is calibrated in days of the month.

The second diagram shows variation of the Alpha Index for each day. The dark shaded area shows increases, while the white area shows decreases in the value of the Alpha Index for each day.

The third diagram shows the value of the K Index (shaded area) on a scale from 0 to 6. The dotted line represents the propagation quality where the scale is: from 5 = Above Normal to 1 = Disturbed. - FORECAST:

BEST H F CONDX: JAN 15-21, FEB 01-03, 11-15

BEST VHF CONDX: JAN 2-4, 8-12, 22-31, FEB 4-11

DEC 84	CON DX	SOL FLUX	LEVEL	SSN#	GEOMAG. LEVEL	ALPHA	K IND	NOTES
01	LN	079	VY LOW	(018)	UNSET-ACT-M.S.LVLS	13/16	#K=2	
02	LN-BN	079	VY LOW	(018)	UNSETTLED-ACTIVE	17/27	#K=3	
03	LN-BN	080	VY LOW	(020)	UNSETTLED-ACTIVE	14/23	#K=3	
04	LN	078	VY LOW	(017)	ACTIVE-M.S.LVLS	17/26	#K=3	Periods of storm.
05	LN	075	VY LOW	(012)	ACTIVE-M.S.LVLS	16/18	#K=3	Periods of storm.
06	LN-BN	075	VY LOW	(012)	ACTIVE	19/22	#K=3	
07	LN	075	VY LOW	(012)	ACTIVE	17/17	#K=3	
08	LN	076	VY LOW	(014)	ACTIVE-UNSETTLED	11/09	#K=2	
09	LN	077	VY LOW	(015)	QUIET	06/06	#K=2	Best HF prop.
10	LN	078	VY LOW	(017)	QUIET-UNSETTLED	12/08	#K=2	this week
11	LN	081	VY LOW	(021)	UNSETTLED-ACTIVE	13/20	#K=3	
12	LN-BN	080	VY LOW	(020)	MINOR STORM	22/20	#K=3	
13	BN-DIS	079	VY LOW	(018)	MINOR STORM	30/24	#K=3	K=6 03-1200Z
14	BN	077	VY LOW	(015)	ACTIVE-UNSETTLED	10/09	#K=2	
15	BN	077	VY LOW	(015)	UNSETTLED-ACTIVE	14/21	#K=3	
16	BN	077	VY LOW	(015)	M.S.-ACTIVE	22/32	#K=3	K=5 0000-0330Z
17	BN	075	VY LOW	(012)	ACTIVE-UNSETTLED	20/22	#K=4	K=5 1200-1800Z
18	BN-LN	073	VY LOW	(010)	UNSETTLED	10/14	#K=2	
19	HN	073	VY LOW	(010)	QUIET-UNSETTLED	06/09	#K=2	
20	HN	072	VY LOW	(009)	UNSETTLED-QUIET	06/07	#K=2	
21	LN	072	VY LOW	(009)	QUIET-UNSETTLED	10/13	#K=3	
22	LN-HN	073	VY LOW	(010)	QUIET-UNSETTLED	08/08	#K=2	
23	LN	074	VY LOW	(011)	UNSETTLED	12/12	#K=3	
24	LN-HN	074	VY LOW	(011)	QUIET-UNSETTLED	08/06	#K=3	
25	HN-LN	075	VY LOW	(012)	QUIET	08/07	#K=3	
26	LN-BN	075	VY LOW	(012)	UNSETTLED-ACTIVE	18/26	#K=3	
27	LN-BN	075	VY LOW	(012)	UNSETTLED-M.S.	14/19	#K=4	K=5 1200-1500Z
28	BN	075	VY LOW	(012)	MINOR STORM	19/22	#K=4	K=5 0000 STORM
29	BN	075	VY LOW	(012)	MINOR STORM	22/21	#K=3	ISOLATED STORMS
30	LN-BN	074	VY LOW	(011)	MINOR STORM	19/21	#K=3	ISOLATED STORMS
31	LN-BN	072	VY LOW	(009)	ACTIVE	17/20	#K=3	STORM

The SUNSPOT INDEX DATA CENTRE/OBSERVATOIRE ROYAL de BELGIQUE, BRUXELLES, BELGIUM reports MEAN PROVISIONAL INTERNATIONAL SUNSPOT NUMBER (SSN) MEAN FOR NOVEMBER 1984 = 22.4 as compared to OCT 84 = 12.6; SEPT. = 15.5; AUG. = 24.8; JUL = 37.0; JUN = 46.2; MAY 84 =75.1

The PREDICTED SSN ARE: (CLASSICAL METHOD/SIDC ADJUSTED METHOD) DEC.84 = 36/32; JAN 85 = 35/30; FEB = 34/28; MAR = 32/26; APR = 31/24; MAY = 30/23

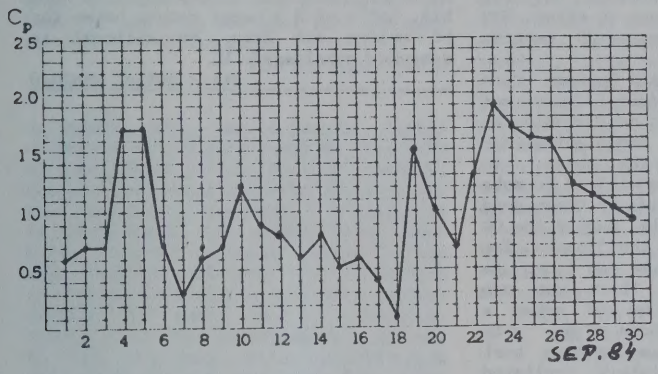
JANUARY 1985 ASTRONOMICAL/PHENOMENA DATA:

03-05	QUADRANTIDS (SMALL) METEOR SHOWER
03	MERCURY AT GREATEST WESTERN ELONGATION
07	FULL MOON

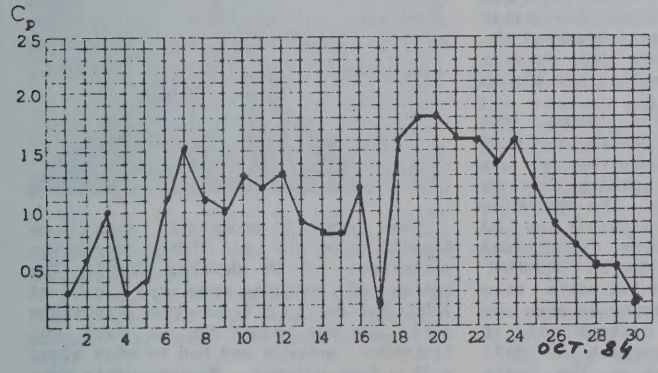
THOUGHT FROM RAINBOW BAY:

1. CONFORM... AND BE DULL...
2. ALL EXTREEMIST... SHOULD BE SHOT

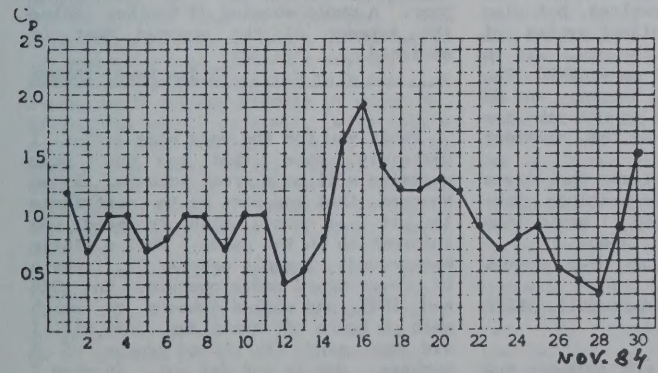
(I guess, I'd rather conform. Hi ...'BMV)



Daily Geomagnetic Planetary C_p Index



Daily Geomagnetic Planetary C_p Index



Daily Geomagnetic Planetary C_p Index

VU2RG WINS ELECTION

Congratulations to Rajiv Gandhi, VU2RG, the prime minister of the world's largest democracy, India. Rajiv won the national election by a land-slide.

W6MLZ — SILENT KEY

A legend in Amateur Radio has passed on to his final reward. Ray Meyers, W6MLZ, died at his San Gabriel, California home on Thursday, December 13, only 48 hours after returning from the 1984 meeting of the Old Old Timers Association.

While Ray will probably be best remembered for his amateur radio column that appeared in the Los Angeles Herald-Examiner newspaper since the mid 1950s, his dedication to our service and the nation spanned a career of more than 75 years.

After a distinguished naval career, in which he served under Admiral Nimitz, Ray became involved in matters of public security. He served in a Civilian Police Chief's capacity for the Navy, then became head of security for the Lockheed California Company. Ray Meyers was very proud of his early 1920s trip under the North Pole with Sir Hubert Wilkins. He has been honored with many awards, including the Christopher Columbus Medal, awarded him by the government of Italy for his amateur radio work with the handicapped. As a noted journalist, Ray was the first radio amateur to get wide spread recognition for the Amateur Radio Service through his Herald-Examiner column and his other published works.

According to close friends, Ray became ill while in St. Louis and flew home late Monday or early Tuesday. It is still not known what ended the life of this truly great humanitarian, journalist and radio amateur. (Westlink Report, December, 1984).

FCC SEIZES GEAR

Another FCC raid has uncovered what appears to be a gold mine in illegal gear. On November 30 and December 3, engineers from the New York District Office and special agents of the US Customs Service conducted a search of Granada Electronics in Brooklyn, New York.

More than 2700 units were seized, including CB transceivers, walkie talkies and FM receivers estimated at more than $500,000 in value. The CB gear was capable of transmitting on unauthorized frequencies, and at higher power than allowed by Commission rules.

Arrested was Lawrence Wallach of L.W. Sales for the unlawful sale of non-type accepted CB transceivers. The 27 year old Wallach appeared before the US Magistrate in the Eastern District of New York on December 3, 1984 and was released on a $10,000 personal recognized bond. If convicted of the charges, he faces up to 5 years imprisonment and as much as $5,000 in fines. (From FCC release)

NIAGARA PENNINSULA ARC HAMFEST

Niagara Penninsula Amateur Radio Club is sponsoring 7th Annual Hamfest - Dine & Dance at UAW Hall, Bunting Rd. St.Catharines, Ontario on February 2nd. 1985 form 8 a.m. to 2 p.m. Prizes, dinner - dance. Talk-in VE3NRS 147.24/84, 146.520.

I have just received my first copy of RADIOSPORTING, and I am very impressed. Just as promised, the physical quality of the magazine is very high, the content is excellent, and it appears very well laid out and organized. I was expecting the first issue to be full of promises of things to come, but it reads like a regular issue, and everyone appears comfortable with what they are doing.

KH6BZF's propagation article was particularly interesting, and it seems a great shame that his writing style and analysis hasn't been more widely read before now.

I was pleased to see so much Canadian content in the magazine. The U.S. magazines rarely have anything to say about the rest of the world, in much the same way as our own TCA is far form worldly in scope. Reading RADIOSPORTING, one feels Canada is a real part of the contesting world, and hopefully we will see a similar view of activity in other continents. We all know who the big guns are worldwide, and in our own country, but who is the big gun, or the gifted competitor in DL, G, JA or U? I would really like to hear more about the European scene, and more talk about contesting in other continents might even encourage more people in contest-dormant countries to show up. Let's hear something about J28DM, who regularly calls unsuspecting contesters late on Sunday.

I have a proper score from VE2USA in the CQ WW DX SSB. I was scheduled to go with them, but had to withdraw a week before departure, but not before getting DOC to issue the special call. They were at Lac Ouescapis, about 300 km north of Rouyn-Noranda at 50.14N.

The operators were: AC8W, K8AQM, K8DD, KA8POW, KA8SEW, KD8SF, N8CQA and WD8CRY, and they were MM, not MS. Half the group were experienced contesters, and the other half were keen, and getting started in the sport. Here is the score breakdown:

1.8	335	5	6
3.5	788	9	17
7	740	14	18
14	869	24	72
21	667	20	56
28	55	9	18
	3454	81	187

VE2USA M-M TOTAL - 1,890,472

As you can see, this is a little short of the information you got. I don't know who your source was, but he sure wasn't talking to these guys.

I was active in the CQ WW DX CW, from XN3OCU, but poor antennas and rig failure caused me to give up after 250 Qs in the first 24 hours on 20 meters, single band.

Three cheers for WOUA's Contest Code of Ethics. I must admit I have not always been as tolerant as I should be in a contest, and while these guidelines seek to reinforce the best in contesting, we should be willing to make an honest effort to abide by these good suggestions. Incidentally, during the CQ WW DX SSB, I also got the 'thanks for Mexico' routine, and like you I had to explain where I was. There was one character who called me and asked a couple of leading questions of me, with the intent of exposing me as some sort of phoney. This immediately irritated me, and I told him my QTH was south of Greenland, (which it is, sort of) to get rid of him. He kept up his slimy questions, and I suppose I deserved it. I'll try to be better next time. Forgive me, George. (Next time I'll say I'm in the Rideau Canal Zone).

Here's an idea for the future. VHF operators are using a system of 'grid squares' in much the same way we use countries and zones as multipliers in contests, and in DXing. The system is based on 20 degrees lattitude by 10 degrees longitude squares, subdivided into 2 degrees by 1 degree squares. These small squares are the units used in VHF DXing, but the larger squares may be useful for HF DX and contest work. If IRSA would consider a contest (10 MHz?) with these large squares as the basis for score calculation, we would not only attract attention to ourselves, but also help popularize an excellent system of QTH location. You, by the way, are in FN03, I believe, and I am in FN25. The FN describes the 20 X 10 square, and 03 tells which small 2 X 1 square you are in. The FN part would be the relevant part for our purposes.

Could you please indicate the times and days the IRSA on-air meetings take place on 14.199 and 3.799? I would like to join in, or at least listen.

Again, congratulations on a superb first issue, Yuri.

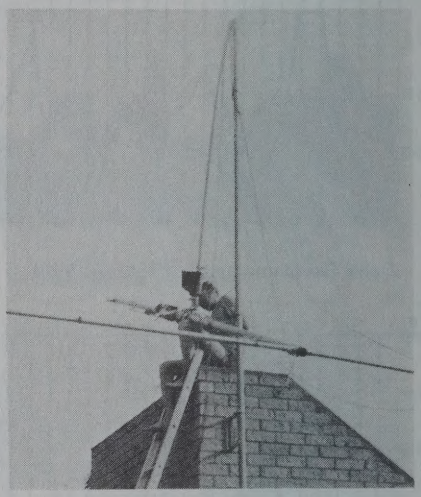
73, Dave Goodwin-Hill, VE2ZP

de VE3BMV: Thanks for the comments and offer to help in sorting out the VE2USA "mystery." On the subject of squares used for multipliers on HF, this offers an interesting possibility. We could perhaps have a contest that is more fair to everyone (is there such thing?) from the scoring point of view. On the subject of net, we should perhaps agree on preferred frequencies where contesters, DXers and others can concentrate. W9RE is suggesting some frequencies elswhere in the issue. So far I had my other antennas down due to workload with the magazine (only the 40 m is up). We are working on setting up the bulletin station and we should get the "IRSA QRG" going soon.

We will be here in sunny California (16 inches of snow last week) for the next few years. Still hope to make it to Dayton each year, but it's a little further from here.

Dxing and contesting is a little tougher from this part of the world. Europe is a long haul most of the time, but the JA's are all over the place. BY4AA was 59+10 dB at 3.795 last week. Unfortunately the crowd got out of hand as usual, and only a couple got to work him. Lot's of 3 element rotary beams for 80 meters out here. My vertical is somewhat outclassed. Hi

Steve Bolia, N8BJQ/6



Last year I managed to work from Lesotho under the call 7P8DB through the assistance of OM Gunther 7P8CI. The number of contacts made were just on 1300 but due to a tremendous windstorm early on the second day we lost our tribander antenna and had to whip along a 15 m loop antenna. We eventually gave up as band conditions were also very poor. A photo showing OM Gunther taking the antenna off the snapped mast is enclosed.

73 Sam Ford, ZS6BRZ

Thank you for the very nice letter. I certainly hope that you and your magazine will be a great success. I am honored that you want me to contribute to it. I would like to send you information on the bands. Just a little background. I don't operate CW. I was a US Coast Guard radio operator in 1946 and 1947 and worked 4 hours on watch with 8 hours off every day, and all I did was send CW, coded groups of 5 numbers, day in and day out. So when I got out I said no more CW. I don't like contests, except in CQ WW contest I am

looking for a new one on 80 and 40 m. I personally think that contests are rude. Guys step on each other, act indifferently and cause air pollution. Something like KV4AA getting on the air to make thousands of useless contacts and then getting into the Guiness Book of Records. If everybody did it, the bands would be ridiculous. I don't think it should be recognized. This is my opinion, the bands are bad enough. I still do not have a computer or any time for it. I still work for the city of Hot Springs, Ark., full time and overtime. We take care of the traffic lights, all the electrical work, and maintain all communications equipment. I have 5 acres in the woods; only one and a half to mowe and trim. I operate a little in the mornings and nights, and as much as I can on weekends.

I don't like lists and I see more of them than ever before. I certainly hope that the DX stations will eliminate them. Going by districts is fine, but split would be better. I wish they would try to go by propagation. If the area is coming strong, try that one first, but also give the other ones a chance. My best 73s and wish you good luck and much success in you endeavor.

Lenny Mendel, K5OVC

de VE3BMV: As we say in Canada: "Let's celebrate our differences." We have many nationalities living here in harmony, and our government supports this, rather than "melting us together." It helps us to understand and respect each other better. I think we should strive for the same thing on our amateur bands and find the ways to live in peace with mutual respect for each other's interests. That's what IRSA is all about. We want to help to promote this understanding and carry out dialogue among all of us involved in various aspects of the hobby. Quite often a better understanding of the "other" side makes it easier for us to undestand it and "tolerate" it, even to admire it.

I would like to extend my best wishes to you, Yuri, and all those involved with RADIOSPORTING, and hope that it's a sucess. I believe that anyone interested in DX or Contesting will find RADIOSPORTING very refreshing. Congratulations!

I would be interested in manning an IRSA booth at our annual Okanagan Hamfest, probably the last weekend in July.

In the 1984 CQ WW SSB Contest propagation here was not the greatest, but was better than the forecast. The best openings were to Japan in the early to mid-afternoon (196 JA's worked). I had a pretty good opening to Europe on Sunday with average signals of about S6. Africa was barely existent, with only a couple of weak stations heard, working mostly the east coast, and of course California. They were in S. Africa, Nigeria and Morocco. Needless to say, I was not able to work any of them. Maybe next year!

My age is 26, married with a young family, so it makes it tough to work every contest that comes around, but I do go out of my way to get in on the CQ WW DX SSB and the CQ WPX SSB contests.

I'm working for Energy, Mines and Resources looking after the Seismograph Station located 15 miles SW of here and have to be there every day (7 days a week!) to change the records, etc. For the CQ WW Test, only the bare essentials, like changing the records, were performed on a daily basis (very early in the morning), leaving me a lot of catching up to do on Monday, but it was all worth it. GREAT FUN despite not so big a score. de George Furtado, VE7EIK, 254 Middle Bench Rd., Penticton, B.C.

Today's mail just brought me a complimentary copy of your new magazine. Thank you, for sending me a copy.

I regret that I cannot see my way clear to subscribe to your magazine and/or support your association.

First, I think that we radio amateurs "need" another magazine like we need a hole in our heads.

Second, I could never see my way clear to support, financially or otherwise, something like this which is promoting contests. Personally, I strongly feel that contests are, to a very great degree, ruining Amateur Radio, not to mention ethics and ungentlemanly behavior, to mention just a few! Contests are great, for some; however, with some kind of a contest, every single weekend, cluttering up EVERY amateur frequency, it is really just a little much, to say the least.

The writer is one who, again, strongly feels that most, if not all contests should be, by gentlemen's agreement, strictly limited to specific frequencies on all amateur bands. Then, there would be some frequencies remaining for the many who are not contesters.

Sorry, Yuri, but this is the way I feel. And have felt, for some 48 years!

De VE1SH/W4, Ronald J. Hesler

de VE3BMV: What do you say guys? (Ron is past Canadian ARRL director.) All I can say is that one of our goals is to help to sort out the mess and bring peace between contesters and normal hams. If Ron read our magazine, maybe he could find out that contesters and others contributed to the art of communication more than rag chewers or those with little radios hanging from their belts. I'd rather drive a beat-up Rabbit today, than chase bats in a cave some thousands of years ago.

Congratulations on your first issue of RADIOSPORTING!

As long as you asked, I thought I would give you my comments on your goals and ideas. First of all, the most important goal you MUST maintain are numbers 1 and 2 (IRSA objectives). It is my sincere belief that all of the major magazines and organizations in North America are leaving the "novice" operator behind. There is nothing being done to improve the overall quality of our operating practices.

We need to educate the new operators, as they join our ranks, as to what are considered good operation practices. Having been on "the other end" of the DX pile-up and contest, I know that once an operator firmly tells those who get out of line how they want the pile-up to run, 98 percent will follow the instructions. We can't put in print what should happen to the remaining 2 percent, hi. All it takes is a little information.

I think that we have also developed a fragile idea about "novice" operators. Too often we ask the operator with the smaller station to "join the big guns" as a guest operator. The experience is fine for the period of the contest, but once the operator gets back to his 200 watts and a dipole, he operates very little. Instead, we should encourage the newer operators to get on the air with their own stations in addition to spending time with the "big guns."

It would appear that another element that has been sadly missing is "How To" articles. For those of us who do not live near a major metropolitan area, this type of article is often the only printed instruction we are ever exposed to on operation practices, station set up and operations, etc. Also, we often forget about long established frequencies that have been set up by "gentlemen's agreements." These ideas should not be forgotten or cast aside. At least they should be discussed for validity.

Finally, I believe that the subject of propagation has been treated too lightly in all the publications. For those who live and die by the chart, they have lots of propagation charts available. However, often these are the operators who constantly complain the bands are dead, and spend the rest of the day watching television. I am constantly amazed to hear some of our "better operators" complain that 10, 15 or 20 meters is dead, only to see they have spent little time learning why, or if there is even a possibility of an opening to some area of the world they were not expecting. Or worse yet, not even listening to learn that there really are stations on the "dead band." We must not forget that if "everybody" listens, there will be nobody transmitting on a "dead" band.

Thanks for allowing me to let off some thoughts to ponder. Again, good luck, and I look forward to the next issue of RADIOSPORTING.

Ross, WB6GFJ, also FO0FB, ZK1XE, ZL0AKO, VK4BZZ, 3D2FB, ex: KH6GJW, KL7FFT, XE0GFJ

de VE3BMV: How true, most operators go through the exams without learning how to make the contacts and what are the proper operating techniques. If they listened for a while, they would probably find out do's and dont's. But lot of people get in with their mouths engaging before the brains and they think that the biggest honor is to be a "policeman" on the frequency. We hope to show and to lead the way. Those willing to be true hams will follow and will set an example for others. We are dedicated to quality and we have a growing number of the world's best in their respective areas. Through their recollections of how they got there we should be able to show a "short cut" to excellence and we hope to appeal to all, from novice to champion. Spread the good word about IRSA and RADIOSPORTING and let us know what is happening at your end!

Thank you for the sample copy of RADIOSPORTING. It seems to be a very interesting publication. However, since I am not able to subscribe to it, I thought you might want to hear from some of those who do not totally agree with your point of view. Maybe it will be possible for me to subscribe sometimes soon (financially).

First off, I must disagree with your point of view in that the radio teletypers are interfering with the European DX operators. It would seem that quite a few of the "old timers," or those who are DX fanatics, seem to care less that there are other modes of transmission, and the fact that they must operate somewhere. If the ones who complain about RTTY would just stop and think about the fact that the RTTY enthusiasts should be allowed some portion of the spectrum, instead of being chased from one frequency to another, then there would be less griping about it. RTTY operators are entitled to QRM-free space, just as well as other modes of operation. There sould be sub-bands (such as the CW area) where RTTY could be concentrated. I have heard few bitching when there is a DX pile-up and a high speed CW operator disrupts a pile-up in the phone portion of the band, yet this continues.

Second, contests are fine if you like them (I don't, but get in them anyway). There is a large number of hams, in every call area, who firmly believe that good operating practice should restrict the contests to no more than one-half of the space available for that particular mode. Just tell me why a ham who likes to rag chew, or someone who is handling traffic - especially emergency traffic - should be run off the band for all the QRM from a contest. There have been instances in some contests where the emergency traffic has been disrupted by some clown insisting on contest points on the same frequency. The same applies to some of the twenty meter nets, handling traffic, or nets for DX, or other purposes.

Third, I wholeheartedly agree with you that DXers need a publication for their own specific purpose, and the same applies to Contesters. This is an excellent idea.

Fourth, the article on Kermadec was very enlightening and enjoyable. One item which bothers me, however, is the fact that, if the QSL cards have all been sent out, mine has not been received! It bothers me that cards do seem to take a long time in being returned (postal systems being what they are, along with other factors).

Fifth, The DX news and the FCC news are most welcome articles. The points and bits covered seem to be greater, by far, than any other publication which I have received, and this includes World Radio News, the LIDX bulletin, and others.

Now, so that you don't think I am some newcomer upstart, let me state my "qualifications": I began fooling around with radio in 1939, when there was an expedition to the Seneca Caverns, near my town, which involved two and a half meter activity by prof. John Kraus. At that time I aided him in placing a transmitter (in a rubber ball) into the underground river in order to attempt tracing the stream and getting some idea of the underground course. There were quite a few fellows with portable or mobile rigs tracking the object, also. I have been continuously licensed since the end of the second world war, and have been one of the seven founders of the International County Hunters Organisation, a member of the RSGB, Royal Air Force Radio Society, a life member of the ARRL, DXCC 266 confirmed, with five more waiting on cards, WAZ, five band WAS, and other information, as well. Also noteworthy, my wife is licensed, and both of us are disabled (she in a wheelchair) while I am very limited in walking but simply cannot do antenna work, or tower climbing, at all. As a result, my antenna system is in lousy shape, but all in all, things could be infinitely worse here than they are. I also am involved in RTTY with the TRS-80 color computer, and the TS-820s, the TS-700sp, and other gear.
De K8IQB, M.L. Braun, 202 Howard St., Bellevue, OH

de VE3BMV: First: I do not think we are really complaining about RTTYers or any particular mode. We are talking more about a case where someone is operating on a particular frequency, and is there for a while, be it contest or rag chew. Then someone else comes on and just wants "his" frequency. Or starts calling CQ without asking if it is used or listening there for a while. It happens a lot with novices, when, for example, you are trying to dig the weak one out. And here comes a 5-minute CQ at 5 WPM and wrecks it (or RTTY, SSTV). Isn't that partially because that part of the band is an RTTY, or novice, etc., "band"? I don't think anyone owns any frequency in ham bands. We have gentlemen's agreements. If we have, let's say, a major contest 6 times a year, where we have over 80,000 hams participating, and they are on, even when the band is dead, is it too much to ask fellow hams to let those contest nuts have their fun? They are usually quiet in between the contests.

Second: Yes, we are asking contesters to be considerate and set an example of good and proper behavior, and this is one of the aims of our magazine, to promote fair play and good ham spirit. The emergency traffic should always have priority. The examples of bad behavior can be publicized (our Clara, NO/FOOL is dying to find out about your "beef") and perhaps this could help. Everyone is trying to get the "numbers" up, but very few are trying to improve the quality and make the hobby more interesting and experimental. We hope to fill that gap.

Sorry about your and XYL's condition. Hey contesters in the Lou's area! How about helping him to get his antennas in shape and showing that we are not just 5904?

And Lou, if you could write an article on experiences with that transmitter in the rubber ball and W8JK, we will give you a subscription to RADIOSPORTING and some more. How about it?

I found my sample copy of RADIOSPORTING in the mail the other day. I first thought, "another magazine filled with uninteresting material." After only thumbing through in a few minutes I was reading it cover to cover. My wife had a hard time getting me to put it down to eat supper. It was such a pleasure to read and see pictures about hams I have had the pleasure to meet and talk with, and all the articles on DX and Contesting.

Things have changed, as I look back on my days of ham radio as I was first licensed 33 years ago as W9ZTD. My greatest DX contact was this year when I worked Chips wife at BY1PK for my last country #315 to add to my overall total of 348. I am now not as active, a little older, and don't have the get up and go like I used to have, but I still like to get in a pile-up, and work a few contests. The days of winning are gone, since I have only a tribander up at 50 feet, but the fun is still there. DX in West Texas is not good. All we have here in Midland is dust storms and bugs, but the smell of gas crude in the air of this section of the country is comforting. I am 600 miles from Houston and Gulf Coast and still in Texas. Texas covers a lot of ground and DX propagation can change from one end of Texas to another. When I was back in Indiana, DXing was much easier. Now, with all the countries worked and 5BDXCC, there is not much left to work for, but the desire is there.

We have a local active West Texas DX Assoc club of which I am president. W5KGX is vice president, and W5LXS is secretary. We meet in each other's homes monthly between Midland and Odessa.

Enclosed find my check for a new subscription and membership in IRSA. I am really looking forward to the issues and I wish you the best of luck and a job well done. If I can help just let me know. If you have any extra copies of RADIOSPORTING for our club members, send them my way.
KE5CK, Les Bannon, (ex-W9ZTD, PJOMM-68)

de VE3BMV: Thanks for the kind comments; it is just a humble beginning. We hope to do the same thing with the magazine as we have done with contest scores and records. It is "just another" contest. I can offer my experience and (hopefully) sane judgment to make RADIOSPORTING favorite reading for active (and inactive) hams. But we need everybody's help to keep it a lively and informative magazine that reflects the times we are in - having fun and suffering. So even those who are "tired" or retired hams, please sit down and write us an article about those good old days or your present experiences. There are many who would like to find out where the old tigers got burned and where they had fun. Keep the material coming in! The biggest help we can get? If you like the magazine, please tell others. If you don't like something or know a better way, please let us know!

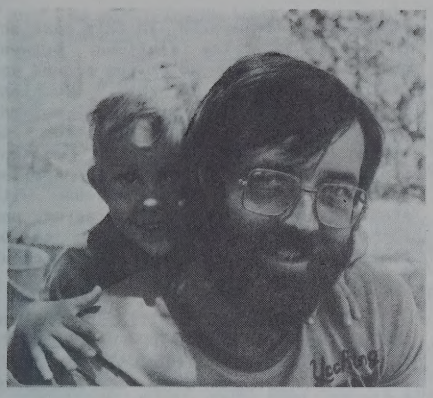
I would certainly like to subscribe to RADIOSPORTING and may even be able to contribute the occasional article.

I am not what you would call a "big gun" on contesting. Living on a property with limited dimensions (about 12,500 sq. ft.) and having a young family means that I can neither erect antennas of gigantic proportions nor take part in as many contests as I would, perhaps, like. I therefore confine my contesting energies to a big multi-single effort in CQWW phone every October.

My shack contains mainly homebrew equipment (largely because of a lack of funds at the start of my ham career) and my antennas are also homebrew. On 28 and 21 MHz I have 3 element quagies and on 14 MHz a 2 element quad, all mounted on the same spreaders and boom.

The quagi configuration is quad reflector, quad driven element and yagi director.

On 7 MHz, I have a full-sized 2 element yagi with tapered elements mounted on a 16 foot boom, and on 3.7



MHz I have one of the half-slopers you refer to in your letter (I would value the opportunity of discussing the characteristics of this strange antenna with other amateurs who have tried it).

The antennas are mounted on a 50 foot ex-windpump tower with a 20 foot scaffold pole extension on which the quagi is fixed. My rotator consists of a modified ex-Dakota propeller pitch rotor with a universal and a constant velocity joint out of an old "mini" car.

My main interests in amateur radio are HF antennas and propagation (especially on the lower bands) and the CQWW contest. I still aim to put up an antenna for 1.8 MHz, but must still decide exactly what is feasible and what will give me the best DX results. South Africa is a long way from other centers where there is 1.8 MHz activity! If someone were to organize an LF bands contest, I would be very keen to take part.

I am also employed professionally in communications. I was educated in England, obtaining a degree in electronics from Brunel University in 1974. I worked for a company making JF communications equipment until 1976, when I emigrated to South Africa, taking up employment with the local branch of the same company. In 1978 I moved to a semi-government organization and have been involved at the other end of the RF spectrum in microwave communication links.

I think your idea for RADIOSPORTING mangazine is excellent. I am looking forward to reading about other amateurs' experiences in contesting and hope to pick up a lot of tips. Please bear in mind that postage to countries outside North America takes a week or two so information relating to certain events, such as DXpeditions, etc., should be sent out in good time.

I have enclosed a photo of myself, a photocopy of my answers to your questionnaire and the subscription to RADIOSPORTING.

If you would like me to write an article on my 7MHz yagi, or on my experience of half-slopers, please let me know.

de ZS6BPL, Greg, PO Box 1568, Garsfontein, 0042, South Africa

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Thanks for the invitation letter to the IRSA. I'm so interested in the association and I'd like to join.

I was licensed at JA0CUV in 1965 and I moved to Tokyo when I graduated from highschool. I had licence JE1CKA but used JA0CUV/1 until 1980 because it was much more familiar to me. I made my first DXpedition to Nauru as JE1CKA/C21 in 1973 together with JA1OCA and JA1MCU. I operated CW for two weeks. Since I have been so interested in DXpeditions, I have made many. S21CW and 8Q6AG/AH in 1974, VR1AK, VR8D, VR4CW and YJ8CW in 1976. I operated several DX countries as a second operator: DX1TDX, DU1MRC, N1BTP/WH0. But recently I lost interest in DXCC chasing. I have spent many hours (most of my free time) chasing DX. These days my interest in ham radio is CW contesting. I love CW very much so I often chat with several friends on CW and this helps my English ability little by little. I often work the CW DX contests so we have met many times (either as JA0CUV/1 or JE1CKA).

I do not have permission to install antennas so I am looking for a suitable cottage in the countryside to build a contest shack. I'll be back soon.

I've been taking care of the nationwide contest club, Japanese Crazy Contest Club, since June, 1982. I will be able to inform you of any JA activities. RADIOSPORTING will be a good news source for us. At present, there are 160-170 club members and membership is increasing.

Hope we can help each other in the ham radio sporting world.

(Age 35. Working for National Aerospace Lab., Aeroengine Div.).

de JE1CKA, Tack (also N1BTP)

Thanks for your letter about and copy of RADIOSPORTING. General Manager Sumner asked me to respond in his behalf.

To answer your several questions, QST does not provide an advance copy of its index to other publications. This is not very practical, since we often have to make last minute additions and deletions based on a number of factors. QST does not maintain a subscription exchange with newsletter publications, but then again, since you are a League member, you get QST anyway.

Regarding high claimed contest scores, our Contest Branch has put you on the mailing list for all future contest scores. The final results, of course, do appear in QST.

At this time, we respectfully decline your kind offer to co-sponsor operating and social events with ISRA(!). This is a matter that could be revisited at some future date.

Best wishes in your efforts to promote radiosporting through ISRA. 73.

Sincerely,
LairdCampbell, W1CUT
Managing Editor, QST

Just received a sample copy of RADIOSPORTING and I'm totally impressed. It appears that you all are off to a good start and I wish you and your group the best of luck.

I have been active in the world of DXing since 1969, although first licensed in 1946, and am presently on the ARRL DXCC Honor Roll with 312 confirmed. Two years ago I got into RTTY and presently run a mailbox on 14.087750 where I attempt to maintain the latest in ARRL Bulletins as well as current RTTY DX information.

I read, with great interest, your "Propose and Objectives" and note in Number 12 your intention to establish a bulletin station on 14.099. I think this is wonderful. The more information available, the better. The only objection I have is the choice of frequency. For some time now, the Northern California DX Foundation has sponsored beacon stations on 14.100 and as you know they provide a valuable propagation indicator for the ham community. To establish a station one kilohertz removed from the "beacon" frequency would be almost disastrous and most detrimental from a public relations standpoint.

Personally, I would like to see all mailboxes, bulletin boards, etc., located/relocated (including mine) above 14.100. This would ease the already crowded RTTY DX portion below 14.100 and allow some breathing space for the furtherance of digital technologies. You might want to give this some thought.

I am enclosing my personal check to cover my IRSA dues and a one year subscription to RADIOSPORTING. Again, the best of luck with this endeavor.

Best Holiday wishes and 73,
Joseph T. Wood, AJ0X

de VE3BMV: I thought that 1 kHz spacing from the beacons on CW mode would be sufficient (spoiled with Fox-Tango filters?). I think that CW should stay away from the phone bands unless it is crossmode. The rest of the QRP and DX world got "squeezed" between 14.100 and 14.150 on phone. Would 14.198 be sufficient? Should we use "WIAW frequencies" in between the bulletins? Should we land on the empty 10 MHz band? Any suggestions? We are looking for stations that can run short bulletins, something like an IRSA "hotline."

Here is my subscritpion to RADIOSPORTING magazine. Sure wish you success with it. eing home during the day I occasionally am looking for other contesters to ragchew with - how about suggesting some frequencies for contesters to look for one another. How about 3760, 3820, 7200, 14200, 21300, 28500?

Good luck, Mike Wetzel, W9RE

---

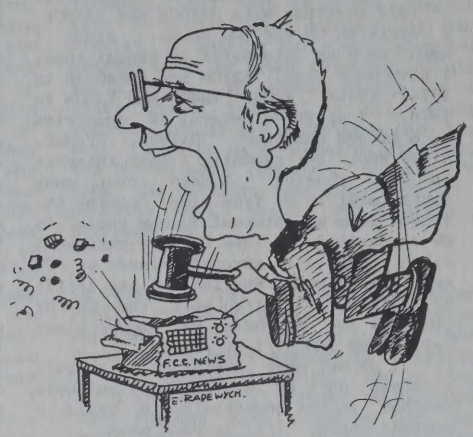
de VE3BMV: Yes we should have prefered frequencies. Let's start with 3830, 7099, 7203, 14200, 21300, 28500 plus or minus about 5 kHz, 24 hrs a day. Hi

---

Mike, W9RE, ex WA9BWY has gradually built super contest station. Mike is using Signal-One CX7B, Alpha 76 amplifier and lot of rotor control boxes. Four towers from 80 to 120 feet support variety of antennas, Yagis, Log-Yagis and VE3BMV Razor Beams. It is year-round job to maintain the antennas.

FCC NEWS

Bill Grenfell, W4GF



ON JANUARY 3, 1985, NEW EMISSION DESIGNATORS BECAME EFFECTIVE IN THE AMATEUR RADIO SERVICE RULES (PART 97) as well as for the other Radio Services regulated by the FCC (Gen. Docket No. 80-739). This is a part of the implementation of the final Acts of the World Administrative Conference of 1979. The Part 97 rules amended are: 97.7(e), 97.69(a), 07.61(a)(b), 97.65(a)(b)(c)(d)(e) and Appendix 3 (of Part 97). "The new system for emission designators will not require modification to equipment. "It changes only the system used to identify emissions." "The new emission designators...use three symbols. The first symbol indicates the type of modulation of the main carrier, the second symbol indicates the nature of signals modulating the main carrier, and the third symbol indicates the type of information to be transmitted." As before, the amended Appendix 3 contains a tabulation and description of the emissions applicable to the Amateur Radio Service. A listing of the OLD/NEW Appendix 3 designators follows: AO/NON; A1/A1A; A2/A2A; A2B; A3/A3E, J3E, R3E, H3E; A4/A3C; A5/A3F; F1/F1B,(G1B); F2/F2B,(G2B); F3/F3E,(G3E); F4/F3C,(G3C); F5/F3F,(G3F); P/PON. "NOTE: Whenever frequency modulation "F" is indicated, Phase modulation "G" is also acceptable." There are...some questions on the Amateur Radio Operator License Examinations that will have to be changed." When the examination questions (Bulletin 1035 series) "...are periodically updated, the questions with the new emission designators may be inserted."

THE DELETION OF THE 2310-2390 SEGMENT FROM THE 2300-2450 MHz AMATEUR BAND BECAME EFFECTIVE NOVEMBER 6, 1984. Petitions for reconsideration of deletion of Amateur use of the segment on a secondary basis were denied by FCC in an Order released on July 2 1984. Previously (12/08/83), the Commission had amended Section 2.106 (The Table of Frequency Allocations) to implement the primary provision by the World Administrative Radio Conference 1979 for flight test telemetry operations in that segment. In regard to its November 6th action FCC stated: "The intended effect of this action is to protect aeronautical telemetry and telecommand operation from possible interference by amateur radio operations." Amateur Rule Section 97.61 now lists 2300-2310 and 2390-2450 MHz with the new 3-symbol emission designators equivalent to the old two-symbol designators used for the old 2300-2450 band (see the above FCC NEWS paragraph regarding emission designator changes).

FCC GRANTED THE ARRL REQUEST FOR EXTENSION OF TIME IN WHICH TO COMMENT ON THE PRB-1 "...Matter of REQUEST FOR DECLARATORY RULING TO PREEMPT STATE AND LOCAL REGULATION OF AMATEUR RADIO TRANSMITTERS AND ANTENNAS" to and including December 24, 1984. In support of its request, the ARRL stated that there has been a significant lag time in making amateurs aware of the Commission's solicitation of comment' in PRB-1. In support of extension, FCC observed that: "The number of comments by amateurs and others interested in this proceeding has been unusually large far in advance of comment and reply comment deadlines. In excess of three hundred comments have already been received. It appears that the public interest would best be served by extending the comment and reply comment periods in order to facilitate the broadest possible public participation in this proceeding."

FCC'S REQUIREMEMTS FOR PROTECTION OF AERONAUTICAL AND MARINE RADIO SERVICES FROM HARMFUL INTERFERENCE FROM SIGNAL LEAKAGE FROM CABLE TELELVISION SYSTEMS SHOULD PROVIDE CONSIDERABLE PROTECTION TO THE AMATEUR AND OTHER RADIO SERVICES USING THE VHF AND UHF SPECTRUM. Aeronautical navigation and communications are in the 108-136 and 225-400 MHz bands with specific emergency frequencies at 121.5 and 243 MHz. Within the Maritime Mobile 156.25-157.45 MHz band, 156.8 MHz is the distress frequency. Beside providing cable leakage field strength limits, FCC is requiring that "All cable television operators shall provide for regular signal leakage monitoring of their cable television systems for signal leakage, covering all portions of the systems at least once every three months." "During regular monitoring, any leakage source which produces a field strength of 20 uV/m or greater at a distance of 3 meters in the aeronautical radio frequency bands shall be noted and such leakage shall be eliminated within a reasonable period of time." (Section 76.614). A very detailed check of the entire system is required once a year.

" THE FCC HAS GRANTED THE JOINT AMSAT/ARRL REQUEST FOR A SPECIAL TEMPORARY AUTHORIZATION (STA) PERMITTING TEMPORARY OPERATION OF AUTOMATIC DIGITAL TELEPORT STATION." (THE ARRL LETTER, 11/08/84). "Teleports in this case act as automatic relay stations between packet radio networks on the ground and amateur satellites in orbit." Sections 97.126(a) (b) and 97.79(b) were waived: to permit a teleport station to automatically retransmit other amateur stations; to permit remote controlled teleport stations to communicate with stations not on the network diagram; and to permit a teleport station to be operated under automatic control without a control operator at a control point.

THE ARRL HAS PETITIONED FCC TO AMEND ITS RULES TO PROVIDE FOR AUTOMATIC CONTROL OF DIGITAL COMMUNICATIONS ABOVE 30 MHz. Excerpts from the petition follow. "The use of Computer Based Message Systems is a new aspect of amateur communications which should be encouraged, consistent with establishment of standards for good amateur operating practice....the level of amateur experimentation with digital communications is both feasible and necessary to facilitate further development of such experimentation. Of course, the authority to utilize automatic control of digital communication would not alter the primary responsibility of the station licensee for proper station operation." (ARRL letter, 11/20/84). As this was written, a RM-number had not been assigned yet to the petition by FCC.

WOULD YOU LIKE TO HAVE YOUR CHOICE OF THE LETTERS IN YOUR CALL SIGN? "ARRL's Plans and Programs Committee will study the feasibility of ARRL offering its assistance to FCC in the area of maintaining amateur licensing records in general, but especially in the administration of special call sign requests of clubs and individuals." (ARRL Letter, 11/08/84).

THE ARRL HAS PETITIONED THE FCC TO ADD THE USE OF F2 TO THE EMISSIONS PERMITTTED IN THE 28 MHz BAND SO THAT REPEATER STATIONS MAY USE AN AUDIO TONE FOR IDENTIFICATIONS AS IS PREVALENT ON THE HIGHER AMATEUR FREQUENCY BANDS. As this was written, a RM-number had not yet been assigned to the petition.

THE ARRL HAS PETITIONED THE FCC TO ALLOW EXAMINEES WHO HAVE FAILED AN OPERATOR LICENSE TEST TO REPEAT IT IN 27 DAYS INSTEAD OF 30 DAYS AS IS NOW REQUIRED. Comments sent to the Commission and the ARRL should refer to RM-4835. FCC's mailing address for such purposes is: 1919 M Street N.W., Washington, D.C. 20554. I understand the purpose is to allow retaking an examination given on a regular 4-week cycle rather than a monthly cycle.

FCC "CLEARED THE AIR AS TO WHAT EXTENT HAMS MAY PARTICIPATE IN SEMI-COMMERCIAL EVENTS." according to WESTLINK Report of 11/16/84. This year the New York Marathon became a "commercial venture" by beginning to award prize money to the winners. The Tri-State Repeater Council President wrote FCC "... to find out what amateur radio activities in...this and similar events were permissible." Private Radio Bureau Chief Robert Foosaner replied that while "...the Rules specifically prohibit business type communications using ham radio, there were no regulations to stop them from working on an event of this sort as long as any pecuniary benefits to the race sponsor

or its participants were 'incidental.'" He approved the "...'Emergency Medical Network' and the 'Logistical Network', both of which were of direct benefit to the safety and welfare of the participants and the public. "Nixed, however, was the 'Lead Runner position Net' which was suggested to be moved to commercial FM channels."

U.S. AMATEUR LICENSEES IN PUERTO RICO HAVE PETITIONED FCC FOR TELEPHONY OPERATING PRIVILEGES BELOW 7100 kHz. Comments on this petition should refer to RM-4872.

SENATOR BARRY GOLDWATER HAS ASKED FCC CHAIRMAN MARK S. FOWLER THAT THE COMMISSION "KEEP HANDS OFF" THE 220 MHz AMATEUR BAND. In his November 17, 1984 letter to the Chairman, the Senator wrote:

"More and more, I am getting word that the Federal Communications Commission might be considering a rulemaking aimed at reducing the 220 MHz allocation used by amateurs on a shared basis with the government. Now, this isn't going to sit well and I think the Commission would be wrong in doing this.

"There is an increasing demand for more sevice to the public which use the radiowaves, and most importantly, some new technologies being developed through experimentation permit more signals to coexist within the present bands. I think we especially need to encourage these. But, let's not knock down amateur radio once again in our efforts. The 220 MHz band is where we amateurs can do a lot of experimentation with these new technologies that will benefit all spectrum users. Removing these frequencies from amateur use is unnecessary and would be shortsighted.

"So, I ask you to keep hands off 220. It's needed for continued amateur experimentation, like the hams always have done."

With best wishes

Barry Goldwater

THE CODE SENDING TEST IS OPTIONAL IN AMATEUR RADIO OPERATOR LICENSE EXAMINATIONS ADMINISTERED BY VOLUNTEER EXAMINERS, I have been advised, by an FCC official directly concerned with such matters. He explained that it had been FCC's experience that almost 100 percent of those who can pass a receiving test could pass the sending test at the same speed. He advised that the new examination instructions indicate that the sending test is optional.

AN AMATEUR LICENSEE WHO OBJECTS TO FCC'S AMATEUR STATION POWER OUTPUT MEASUREMENT RULE HAS TAKEN THE MATTER TO THE COURT OF APPEALS IN THE DISTRICT OF COLUMBIA (W5YI Report, 11/15/84).

ON NOVEMBER 2, 1984, FCC'S REVIEW BOARD UPHELD AN ADMINISTRATIVE LAW JUDGE'S INITIAL DECISION THAT THE STATION LICENSE, N2EDW, OF VINCENT J. BEARD IS REVOKED, HIS TECHNICIAN CLASS AMATEUR OPERATOR LICENSE IS SUSPENDED FOR TERM AND HIS APPLICATION FOR GENERAL CLASS OPERATOR LICENSE IS DENIED. Beard was caught during a license examination looking at a crib sheet which contained information which would enable its user to pass all eleven versions of the thirteen word per minute Morse Code exam. (W4GF)

CONTEST NEWS

Frank Anzalone W1WY

New Hampshire QSO Party

1900Z Sat. to 0700Z Sun., Feb. 2-3
1400Z Sun. to 0200Z Mon., Feb. 3-4

The New Hampshire ARA is again sponsoring this year's party. The same station may be worked on each band and mode for QSO points, but the multiplier is counted once only. NH-to-NH contacts are permitted for QSO credit.

Exchange: RS(T) and QTH. County for NH; state, province, or DX country for others.

Scoring: One point per QSO for NH stations. Multiply total by sum of states + NH counties + DX countries worked (NH not a state; and W, VE, KL7, and KH6 not countries).

Others count 5 points per NH contact and multiply total by number of NH counties worked (maximum of 10).

NH Counties: BP, CL, CE, CS, GN, HO, MK, RM, SD, SN.

In addition, there is a bonus of 20 points for all stations working club member stations WB1CAG, W1OC, WB1FFZ, K1RD, and W1WQM (maximum of 100 bonus points).

Frequencies: Phone—1875, 3975, 7235, 14280, 21380, 28575, 50115, 144205. CW—1810, 3555, 7055, 14055, 21055, 28055. RTTY—3625, 7085, 14085, 21085, 28085. Novice—3730, 7130, 21130, 28130.

Awards: Certificates to the top scorers in each NH county and each state, VE province, and DX country (minimum of 5 QSOs). The Concord Brasspounders are awarding a plaque to the top scorer in NH. W1JB is awarding the All NH Award to participants working all ten NH counties.

Mailing deadline for logs is March 15th to: Great Bay Radio Assn., P.O. Box 911, Dover, NH 03820. Include a large s.a.s.e. for a copy of the results.

CLASSIFIED ADS

The Classified Ads rate is 15 cents per word. Remittance in full (cheque or money order) must accompany copy. Each word, abbreviation, model number, and group of numbers count as one word. No charge for Postal or ZIP code. Ads should be typed or clearly printed on a separate piece of paper. The closing date is the 25th of the month preceding publication. A last name or call must appear in each ad with an address or phone number.

Hamfests and Convention ads are free of charge.

ORLANDO HAMFEST IS COMING UP on March 9-10, 1985. Plan to attend, next door to Disney World, great program, Contest and DX forums, over 10,000 expected to attend. Be there!

COLLINS WANTED. Help me continue my hobby repairing S-lines, KWM-2s at low cost by selling me your parts, tubes, junkers at reasonable prices. Send list and prices. All replies answered. W7BUN, Jerry Seligman, 12306 80th Ave East, Puyallup, WA 98373.

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DRAKE B-LINE in good condition for sale, asking $500 (CDN$620) VE3BBH, Paul, (416) 298-9256

CORRECTION

In our November issue we goofed in identifying people in picture on page 4, lower right photo. The one on the left is K5ZD, back belongs to N4AR, and the guy on the right is Doug Zwiebel, KR2Q.

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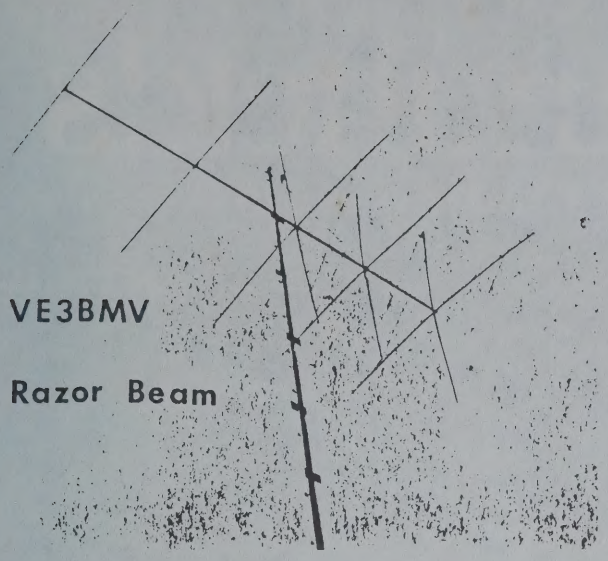

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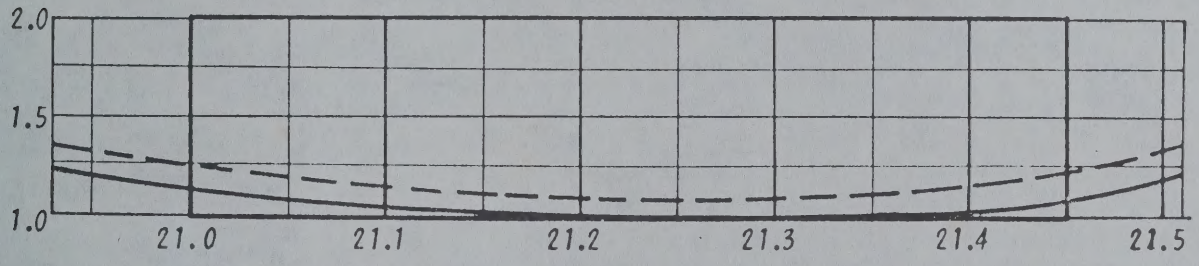

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Front to side	dB	35	35	35
SWR at resonance		1:1	1:1	1:1
SWR at band edges		1.2:1	1.2:1	1.3:1
Nominal input impedance	Ohm	52	52	52
Power limit	kW	15	15	15

MECHANICAL SPECIFICATIONS				
Number of elements Quad		3	3	3
Yagi		2	2	2
Boom length	Ft.	61	41	31
Max./Min. Boom OD	In.	3.5/2.5	3/2.5	2.75/2.5
Longest element -	Ft.	31	21	15
Max. turning radius	Ft.	44	29.7	22
Max./Min. Surface area	Sq.Ft.			
Wind rating - Fiberglass spr.	MPH	120	120	120
Bamboo spr.	MPH	90	90	90
Mast size OD (or specify)	In.	2	2	2
Net weight approx.	Lbs.	104	82	53

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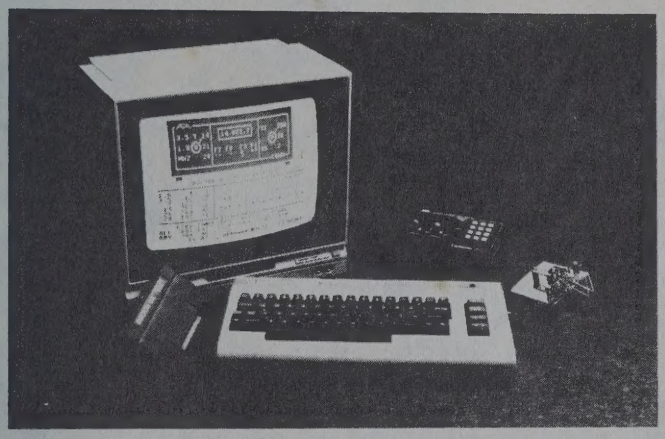

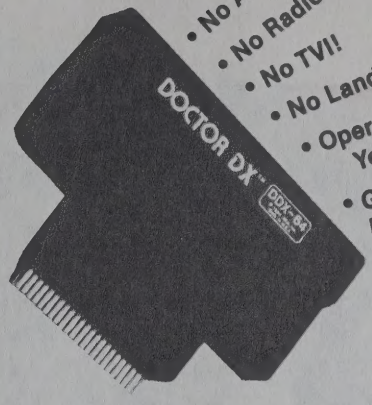

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INTERNATIONAL RADIOSPORT ASSN.

P.O. Box 65, Don Mills, Ontario, Canada M3C 2R6 Tel. (416) 438-6313

Purpose and objectives:

1. To promote international friendship and goodwill through sportsmanship, radio contesting and DXing.
2. To improve the quality of amateur radio operators and operating through education and experience, by voicing the opinions of radio amateurs that are experienced and have contributed to the hobby.
3. To promote amateur radio contesting and other operating-related activities as a sport, and to provide the publicity and recognition that it deserves in the public media.
4. To publish timely articles in the monthly magazine "RADIOSPORTING" on various subjects of interest to Contesters, DXers, SWL, VHF, UHF and microwave enthusiasts, on RTTY, SSTV, computers in communications, fox hunting and anything of interest to the active ham striving for self-improvement. To feature technical articles on equipment design and modifications, antenna construction, radio-wave propagation, and commercial equipment reviews by qualified people.
5. To organize, as an annual event, the "International Contest Symposium," which would run parallel (evenings) with the Dayton Hamvention; to feature timely topics with the participation of some of the world's leading amateurs at the Syposium.
6. To hold an annual Awards Dinner with an entertainment program, where awards for various achievements will be presented.
7. To maintain and publish all time record tables for significant contests.
8. To sponsor and run an annual World Contest Championship, based on results of a number of major contests, with annual the "Contester of the Year" awards in various categories.
9. To administer the "Contest Hall of Fame" and vote on awarding membership to those who have significantly contributed to the sport of contesting.
10. To coordinate and assist in the scheduling of international contests.
11. To hold regular weekly meetings on air on 20 and 80 m. (14.199, 3.799)
12. To provide an automatic, computer controlled bulletin station that transmits the latest DX and Contest news on CW and RTTY.(14.098)
13. All in all, the IRSA will be dedicated to the pursuit of excellence and quality in amateur radio by promoting, publicizing and leading the way.
14. Attractive numbered membership certificates and badges will be issued to members.
15. IRSA will be run by contesters who are selected for their accomplishments and it will be independent of any national or commercial organizations.
16. IRSA will assist and sponsor Contests/DXpeditions, Trophies and other radio sporting and publicity events.
17. IRSA is a non profit organization, with all proceeds to be used to finance events and awards sponsored by IRSA and to cover expenses incured by Association.
18. IRSA members can display the IRSA logo on their QSL cards and correspondence; members agree to obey the Contester's Code of Ethics and to promote it.

The initial fee to join the IRSA is US $12; it includes the cost of a certificate and a badge. The yearly membership dues are US $5.

Honorary Life Membership will be awarded to those who significantly contribute to IRSA and the sport of contesting.

Members will be entitled to be elected and to elect officers of IRSA. They will also enjoy many services and privileges offered exclusively to members.

RADIOSPORTING

INTERNATIONAL MONTHLY MAGAZINE -
BY AND FOR ACTIVE RADIOAMATEURS

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